

The United States Miller

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 1.

MILWAUKEE, JANUARY, 1890.

Subscription Price, \$1.00 Per Year.

STILWELL & BIERCE MFG. CO.
—* DAYTON, OHIO, U. S. A. *

MILLING ENGINEERS

Manufacturers of the Celebrated ODELL ROLLER MILLS and a full line of

Flour & Corn Mill Machinery.

MILLS BUILT ON THE

ODELL SYSTEM.

Contracts taken for mills of any size, large or small, and results GUARANTEED.

Cawker's American Flour Mill and Grain Elevator Directory for 1890-'91

(Copyrighted.)

Will be issued about March 1, 1890. Price Ten Dollars. It will be the most complete of any we have yet published, and will possess many new and valuable features. Send in your orders now to be placed on file. No payment required until delivery of the work. Send for descriptive circular to

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MANUFACTURERS OF THE

CELEBRATED

RICHMOND
Grain Cleaning Machinery

AND

BRAN DUSTERS.

TESTIMONIAL

DARBY & GRUBER,

"UNDINE" FLOURING MILLS.

WILLIAMSPORT, MD., Dec. 11, 1889.

RICHMOND MANUFACTURING CO., Lockport, N. Y.

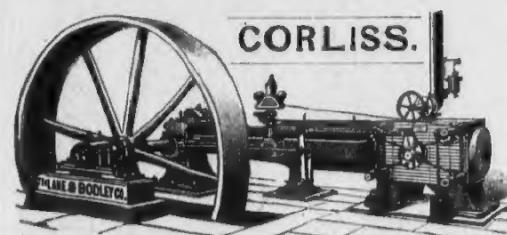
Dear Sirs—The Richmond Cleaners are all that I could wish, do their work rapidly and well. My wheat is cleaned splendidly, with no waste from broken grains. In fact have never seen cleaners that so effectually prepared wheat for the rolls without breaking or destroying considerable wheat until now. Not one grain of good sound wheat is thrown away, and this year is probably as hard or the hardest they will ever encounter in this section, for never before in my experience have I seen so much thin and scabby wheat as it has been my ill-fortune to handle. The Bran Duster is all right and doing splendidly.

Yours very truly,

F. H. DARBY.

LOCKPORT, N. Y.
U. S. A.

THE LANE & BODLEY CO.,



MANUFACTURERS OF

AUTOMATIC CUT-OFF

ENGINES

From Heavy Patterns and of Unexcelled Workmanship.

Steel Boilers, Feed Water Heaters, Shafting, Pulleys and Gearing.

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The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

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* THE * "WESTERN" MILL SHELLER.

The most Compact, Durable, Best Sheller and Best Cleaner.

Takes up but little room, runs at low rate of speed, requires no attention. It is in every respect the

Best Sheller ever offered to the Public.



Please mention this paper. Write for full particulars to

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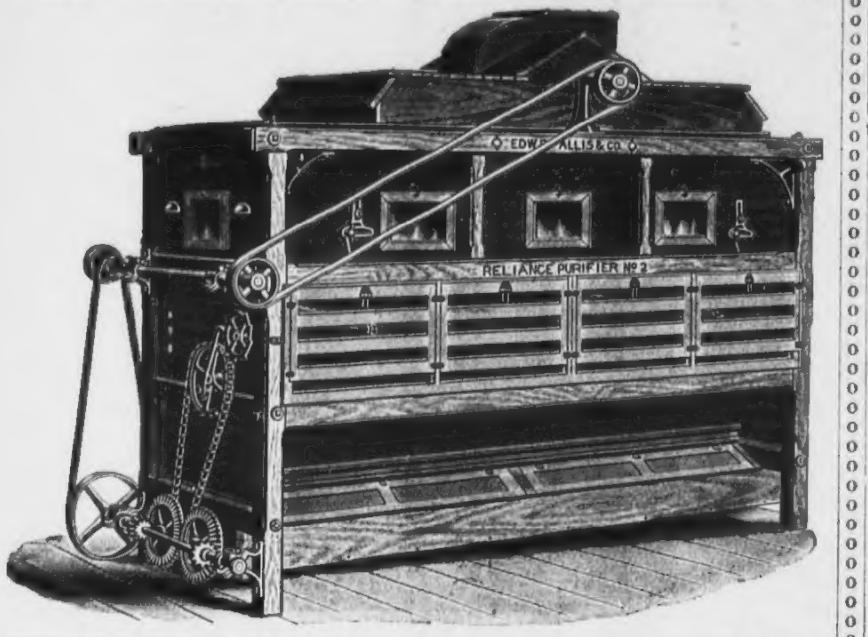
Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



EDW. P. ALLIS & CO.

Mill Builders and Mill Furnishers.

RELIANCE WORKS, - - - MILWAUKEE, WIS.



SOLE MANUFACTURERS OF

• • • THE • • •

Reliance Purifier.

— IMPORTANT NOTICE. —

The Principal Features of the RELIANCE PURIFIERS are covered by our own patents, but to afford the fullest protection to our customers we have made arrangements by which it is now Licensed under all the patents of the

CONSOLIDATED MIDDINGS PURIFIER CO.

This puts it out of the power of Anybody to trouble its purchasers, and backed by the acknowledged excellence of the machine itself, makes it to the interest of every Miller who wants The Best to purchase the RELIANCE.

THE RELIANCE PURIFIER Has been on the market but a short time, but has become a recognized necessity in the best mills, and is used by the Staten Island Mill, New York City, 1,500 bbls.; the Imperial Mill, Duluth, Minn., 2,000 bbls.; the Listman Mill Co., La Crosse, Wis., 1,000 bbls.; the C. C. Washburn Flouring Mills, Minneapolis, and hundreds of others.

• • INDISPUTABLE EVIDENCE. • •

Office of LISTMAN MILL COMPANY.

E. P. ALLIS & CO., Milwaukee.

LA CROSSE, WIS., Nov. 20, 1889.

Gentlemen: We are pleased to state in accepting our mill built by you, after taking ample time to test the same and judging from reports we have had from our flour, we are convinced you have built us as good a mill as there is in America.

Your Gray Roller Mills, Flour Dressers, Centrifugal Reels, Scalpers and Reliance Purifiers give the best of satisfaction, and after ten years of experience in using this class of machinery we are free to say there is no better made.

Wishing you continued success, we remain

Yours truly,

Capacity 1000 Barrels.

LISTMAN MILL CO.,

Wm. Listman, Manager.

MESSRS. E. P. ALLIS & CO. Milwaukee, Wis.

OMAHA, NEB., June 7, 1889.

Gentlemen: We have been running the Purifiers long enough to justify us in saying that the Reliance Purifiers are the most economical and perfect Purifiers on the market. The absence of inside oil boxes is especially worthy of millers' notice in buying Purifiers. There seems to be every adjustment necessary on the Reliance for the perfect purification of middlings, and all adjustments are simple, durable and easy of access. All of our millers say that the Reliance Purifiers are far superior to any Purifiers that they have run.

OMAHA MILLING CO.,
G. E. Russell, Manager.



EDW. P. ALLIS & CO.

Mill Builders and Mill Furnishers.

RELIANCE WORKS, - - - MILWAUKEE, WIS.



The United States MILLER AND THE MILLING ENGINEER.

Fifteenth Year.—No. 1.

MILWAUKEE, JANUARY, 1890.

Subscription Price, \$1.00 Per Year.

AN IMPROVED ROUND REEL.

WE have the pleasure of presenting our readers this month with an illustration and description of a bolting reel manufactured by the Cockle Separator Mfg. Co. of Milwaukee, Wis. which has been quite extensively introduced in many sections of the country evidently with entire satisfaction to the users.

In regard to this reel the manufacturers say: We have come to the conclusion that if the miller is handling good bolting material, he does not want any pounding or mixing of stock. It is very evident that when bolting is done with the least agitation, it will give the least amount of specks in the flour. The stock in this reel has a continual sliding motion; it will not fall from a height as in a hexagon reel or be forced through the cloth by beaters as in the centrifugals; it will not be picked up by the buckets or interior drums and carried to a height, to drop back on the cloth or on the driver side of the reel in a spray, mixed in such a way that the coarse material, specks and light fluff will come in contact with the cloth as much as the flour itself.

The true principle of bolting is involved in a plain round reel. What is the use of any other attachment, when it is nothing but a continual annoyance to millers, and adds nothing to its good qualities as a bolter? The flour from this reel is clearer and sharper than from other slow running reels, and there is no place left in a mill for six-sided reels, inter-elevator bolts or centrifugals, unless on the tail end of the mill, where the miller has some fluffy stock from which he wishes to make a low grade flour.

This improved Round Reel is very substantially built. It consists of a wooden frame with two iron bridge trees, in which rests the reel shaft. At the head end of the shaft is a cast iron reel head, which is set-screwed to the shaft. The cloth is laced to this head by a cord. In the center of the reel head is

a cast iron conveyor, through which the stock is led into the reel. At the tail end of the reel is a cast iron tail spider, to which the cloth is laced. The tail spider is set-screwed onto a sleeve and the sleeve onto the shaft. The sleeve is threaded and a large nut put on, by means of which the tail spider can be moved outward, which stretches the cloth tight. Every twelve inches along the shaft is a spider with steel tire. The bridge-tree at head end is so arranged that it can be raised or lowered, thus giving the reel more or less pitch—from a horizontal position to one-half inch pitch to the foot. This is one of the most essential points to a reel, as the stock can be sent through fast or slow at the option of the miller. This can be done very readily, either when the machine is in operation or standing still, by loosening the bolts that hold the bridge-tree to the posts, and then turning two bolts, on which the bridge-tree is suspended, that pass through the upper girt of the frame. The reel has two con-

veyors underneath, which are driven by sprockets and chain. The cut-offs in same can be handled very easily and will never get out of order. The cloth is kept clean by means of a revolving brush, in the upper corner on the down side, driven from the reel shaft. This brush can be set so as to brush the cloth more or less as desired, or it can be taken off entirely. The reel can be driven from head or tail end, as desired.

Further information in regard to this reel and other special milling machinery made by this firm can be had by addressing them as above noted.

MICHIGAN MILLERS' ASSOCIATION.

AT 1.30 P. M. Jan. 8, the Michigan State Millers' Association was called to order in the parlor of Hotel Downey, at Lansing, Mich., by President D. B. Merrill, of Kalamazoo, Mich., and M. A. Reynolds, of Stanton, Mich., acted as Secretary.

Mr. Voigt, of Grand Rapids, being called upon to state the object of the meeting said it was to take such action as would be of benefit to the members of the Association in particular and Michigan

An assessment of \$10 per member (or firm) was made and an executive committee was appointed and a line of work laid out for them.

The Secretary was voted a very modest salary for the work required of him.

The Richmond flour market matter was brought up and many told of their unfortunate experiences with Richmond dealers.

The following resolution was then offered and carried unanimously by a rising vote:

Resolved, That the position taken by the Northwestern Miller in regard to the tricky dealing practiced on the Richmond market be and hereby is endorsed by the Michigan Millers' Association.

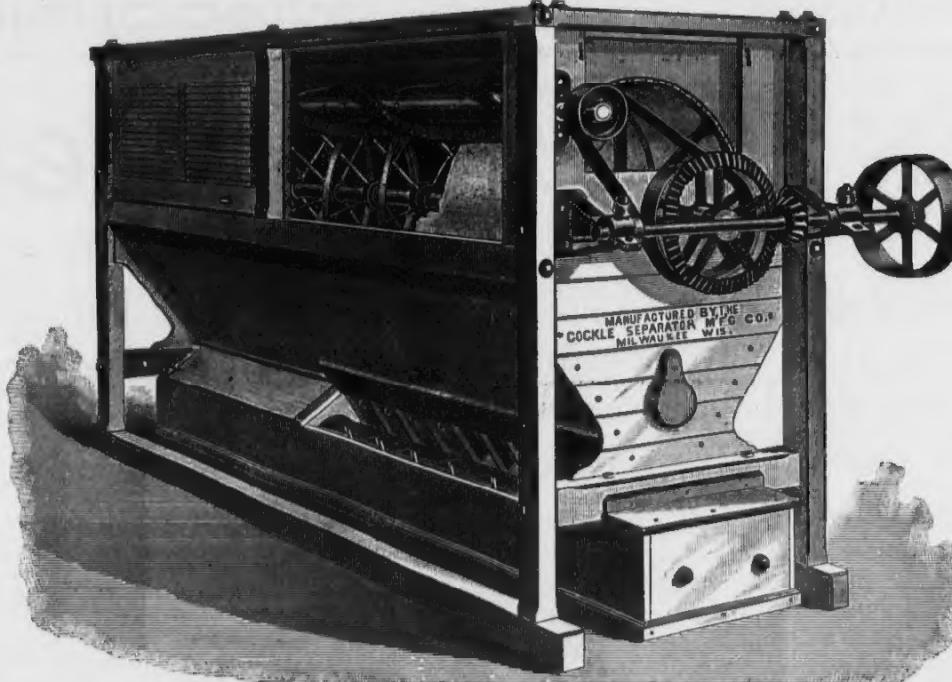
If the Richmond Board of Trade members could have overheard some of the remarks made and instances of crooked dealing recited, their ears would have had good occasion to burn. Election of officers was then in order and resulted as follows: W. B. Knickerbocker, of Albion, President; C. J. De Roo, of Holland, Vice-President; M. A. Reynolds, Stanton, Secretary.

The executive committee elected was as follows: W. A. Coombs, Coldwater; E. E. Chappell, Belding, and Mr. Rowe.

DEFECTS IN AUTOMATIC SPRINKLERS.

Recent heavy losses in property equipped with the automatic sprinkler system should serve to stimulate property-owners to keep closer watch upon these appliances, particularly as the winter season, always a dangerous period for sprinklers, is at hand. Assuming that an automatic sprinkler system is properly arranged, with an ample water supply, piping of sufficient size, heads properly distributed, valves, etc., in proper places, and the entire system up to the standard when finished, there are still a number of points for the proprietor of the risk to keep constantly under consideration. Hand valves should be strapped, open or shut, as is proper for each, by a sealed leather strap, in order that they may not be closed or opened carelessly or maliciously. Corroded sprinkler heads, of some makes more than others, are more or less useless or unreliable, and they should be replaced by new heads. A thin coating of paraffine on sprinkler heads will to a certain extent arrest corrosion. Goods should not be piled within less than twenty-one inches of the sprinkler heads, as they need that much vertical clearance for perfect distribution. The sprinkler heads should neither be painted nor whitewashed. To do so will either impair or utterly destroy their usefulness. Shelves should not be constructed under the pipes, and cases should not be piled in such a manner that the clear spaces between the cases are not covered by the sprinklers.

The "dry-pipe" systems require very careful attention, and it may not be amiss to say here that a factory equipped with a dry-pipe system has just been destroyed by fire. Care should be exercised by the owners of dry-pipe systems to prevent water from collecting, from one cause or another, on the wrong side of the valve. This may be tested by the drip valve. Owners of "wet-pipe" systems should guard against the exposure of the system to freezing. It is most important that there should be at least one man, on the premises protected by automatic sprinklers, who thoroughly understands the system in all of its details, so that he is able to thoroughly test and readjust all parts. There are too many systems which have apparently never been properly explained to those who have them in charge, as inspectors discover gross ignorance in their visits to sprinkled risks. It is too often the case that the total knowledge of the "dry-pipe" systems is gathered from an injunction "to keep the air pressure at the proper point," and in wet-pipe systems "to let it alone." In case of a tank supply, the tank must be kept full at all times. A good and reliable method of testing without climbing up to the tank is to have an overflow pipe returning to the pump room. The pump should then be started daily and kept in operation until the pipe shows the tank to be overflowing. Where muddy water is used, sediments will collect in the pipes. There should, therefore, be some arrangement for blowing them out at stated periods. Where electric appliances are used, there should be some push button or switch device for regular tests.—*N. Y. Commercial Bulletin.*



IMPROVED ROUND REEL.

millers in general. During the past year the Association, although successful in securing the enactment of a suitable grain inspection law, had by their efforts virtually compelled the Detroit Board of Trade to revise their inspection rules so that they were better than formerly.

Sec'y Reynolds said that the mere getting together of millers once a year, although socially pleasant, was not effective. The work of the Association must be carried along continuously in order to be beneficial. A new constitution and by-laws were submitted, but after considerable discussion it was concluded that the old constitution and by-laws would answer all requirements.

Sec'y Reynolds observed that the Association now had but 55 members and that there were 111 mills in the state of over 100 bbls. daily capacity worth at least \$3,210,000 and that the membership should be much larger, and that he believed that some good missionary work would bring in a great many new members.

The president and secretary were also on this committee.

We noted the names of the following millers present, which we regret to say is not complete:

D. B. Merrill, Kalamazoo; C. J. DeRoo, Holland; R. T. French, Middleville; W. A. Coombs, Coldwater; W. R. Knickerbocker, Albion; N. B. Rice, Portland; G. H. Doane, Holly; J. P. Newman, Portland; C. G. A. Voigt, Grand Rapids; H. L. Pierson, Flint; E. A. Pomeroy, Jonesville; Geo. W. Jenks, Sand Beach; M. O. Reynolds, Stanton; F. Thoman, Lansing; E. E. Chappel, Belding; Gus. Appelt, Detroit; Richard Dawson, Pontiac.

The Northwestern Miller was represented by Bert. Hall and THE UNITED STATES MILLER AND MILLING ENGINEER by the publisher.

No other milling journals were represented.

The Association is now in good working order and has enterprising young men in position to push it forward.

UNITED STATES MILLER
AND THE MILLING ENGINEER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NO. 124 GRAND AVENUE, MILWAUKEE.
SUBSCRIPTION PRICE—PER YEAR, IN ADVANCE.To American subscribers, postage prepaid..... \$1.00
To Canadian subscribers, postage prepaid..... 1.00
Foreign subscriptions..... 5s.

All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.

Bills for advertising will be sent monthly, unless otherwise agreed upon.

For estimates for advertising, address the UNITED STATES MILLER AND THE MILLING ENGINEER.

[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, JANUARY, 1890.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER AND THE MILLING ENGINEER. You will thereby oblige not only this paper, but the advertisers.

WE send out a number of SAMPLE COPIES of this issue. We solicit a critical examination of our Journal and invite you to subscribe. The price is one dollar per year. No premiums—no discount.

A belt line railroad is proposed to increase the transfer facilities of Minneapolis mills.

OUR milling friends will do well to carefully read the article on "Modern Milling Methods and Machinery" by J. M. Servoss, of Ft. Wayne, Ind.

THE Holiday Number of *The Northwestern Miller* as promised is better than any previous number. We have looked it through carefully and find it from first to last a masterpiece.

OUR contemporary *The Commercial Advertiser*, of New York, (established A. D. 1797,) issued a very handsome Xmas number. This excellent journal like old wine improves with every year added to its age.

THE Electrical, Mechanical and Milling News, of Toronto, is making a brave fight to secure the adjustment of wheat and flour duties, so that the milling interests of Canada may enjoy reasonable prosperity.

WE acknowledge with thanks the receipt from J. W. Chatterton, London, Secretary of the British and Irish Millers' National Association, of a copy of the proceedings of that body during the past year.

THE Minneapolis Tribune has got established in its new quarters and shows no traces of bad effects from the fearful disaster to life and property, which it met with only a short time ago. May its future be a prosperous one.

A paragraph in *Howe's Historical Collection of Ohio* says: Much of the flour made in Ohio before 1840 was sent west for market. In 1836 Oliver Newberry purchased 500 barrels of flour at \$8 per barrel, and took it to Chicago, then a struggling frontier village, and sold it for \$20 a barrel, citizens holding a public meeting and thanking him for not asking \$50. It was all the flour the people of Chicago had for the winter.

OUR readers will be interested to know that a suit for infringement of patent and claim for royalty on a middlings purifier patent has been commenced against a prominent Wisconsin miller (not in Milwaukee). The miller is a member of The Millers' National Association and the defense will doubtless be assumed by a prominent mill-building establishment that placed the machines in the mill of the defendant.

JOHN M. CAIN, Esq., owner of the Central Mill and other large interests in Atchison, Ks., is at the head of a movement to organize a company to export grain direct from Missouri river points

and thus escape brokers fees, elevator charges, etc., at the seaboard. In another column will be found a vigorous letter from his pen on the subject of "Western Needs." We commend it to the careful consideration of all our readers.

THE *Chicago Times* recently said, the plain, unadorned truth of the matter is that speculation on the Board of Trade has been so thoroughly and irretrievably dominated by one-man power during the last year that it suffered more than most members care to admit. During 1888 privileges of membership on the Board sold at a range of \$1,500 to \$1,700, and the range last year was from \$1,570 down to \$800, a sale at the latter figure having been made within the last week.

MILL Owners will please take notice that "Cawker's American Flour Mill and Grain Elevator Directory" for 1890-91, will be placed in the hands of the printers February 1st, and that it takes about 30 days to complete the work. The publisher desires to have every flour mill represented with proper address, kind of power used and daily capacity in barrels. Mill owners who have not yet done so should furnish the publisher, E. Harrison Cawker, Milwaukee, Wis., with above information without delay.

THE LaCroix family is in want. The millers of this country owe them a debt of gratitude for the part they have played in advancing the milling interests of the country. The millers at prominent milling centres have opened a subscription for their relief. Mr. George Wilson, the well-known mill-owner of Rochester, N. Y., has headed the subscription and is the treasurer of the fund and to him all contributions, great or small, should be sent. The story of the middlings purifier and the La Croix brothers is well-known. The La Croix brothers are dead and the family in need and simple justice, not charity, demands relief from millers able to give.

AT the annual meeting of the Geo. T. Smith Middling Purifier Co. held in Jackson, Mich., January 1, the following officers and board of directors was elected: President, Geo. T. Smith; Vice-President and Treasurer, R. H. Emerson; Secretary, E. Peck; Directors, Geo. T. Smith, E. Peck and R. H. Emerson. Immediately following the above announcement which was supposed to mean the re-establishment of the company on a firm basis, comes the news that demands having been made for the payment of claims, which the company was either unable or unwilling to make, the affairs of the company have been placed in the hands of an assignee.

THE N. Y. Daily Commercial Bulletin in its issue of January 7, presents the annual fire loss for the past six years, as follows:

1884.....	\$112,000,000
1885.....	94,200,000
1886.....	116,600,000
1887.....	129,284,400
1888.....	123,290,520
1889.....	131,949,250

Undoubtedly the year's fire loss would have been much heavier had it not been for the beneficial effects of the fire insurance inspections made by special inspectors and the various bureaus and organizations. The automatic sprinklers have also contributed no small share in the reduction of the fire waste.

WE are in receipt of No. 1, Vol. 1, of *Electrical Industries*, published by the Electrical Industries Pub. Co., 304 Rookery, Chicago. It is a monthly Journal "devoted to the consideration and advancement of electricity in all its applications." It is one of the handsomest new publications that we have yet seen and contains not less than 60 pages. It contains much of value to all interested

in electrical matters and deserves great prosperity. Among the many other items of interest it contains, we find, one stating that at the present time there are 645 miles of street railways operated electrically, using 1280 cars. There are 113 roads in operation and 45 in course of construction.

THE UNITED STATES MILLER has called attention to the fact that there was a strong tendency, especially during the past year or two, to consolidate the ownership of several flouring mills under one management. At the time we wrote that statement we were well aware of the existence of a number of such consolidations, but during the past two months we have had correspondence with nearly every prominent milling firm in the United States, seeking for statistical matter, and we confess we were surprised to learn in how many instances one firm or company owned or controlled two, three and four mills where two years ago there were separate owners for each mill. Our researches have further assured us beyond doubt that there are but very few good mills in this country that have not adopted the roller mill system, either wholly or partially.

THE damages arising from the use of electricity have become a matter of daily discussion by both press and public. *The Chronicle*, a representative of N. Y. insurance papers, commenting on this subject, says:

"Scores of lives and millions of dollars' worth of property have been lost in the last twelve months, because the electric companies, the city authorities and the fire insurance companies have made tremendous mistakes. How to harness the giant, electricity, and make him do his daily work without endangering life and property, is a question which no one, not even the most eminent expert, is able to answer with precision. A few years ago the persons who knew how to handle electricity were rather numerous. Now the motto of every wise electrician and underwriter is about this: live and learn—but be vigilant.

IN our December number we referred to the restrictions placed upon railways operated in Iowa and their enforcement by the state board of Railway Commissioners to the point of persecution. We are gratified to note that since then an amicable compromise has been arrived at between the Commissioners and railway companies. The injunction suits brought by the railways against the Commissioners before Judge Brewer, have been withdrawn and the Commissioners have asked for the dismissal of over forty suits entered against railways for alleged infractions of Iowa railway laws. Railroad companies should be treated with liberality by the people for there is perhaps no other sort of enterprise that tends to build up and develop a country so much. At the same time reasonable laws for restricting abuses are essential when their enforcement is in the hands of an honest and able board of commissioners which in all cases should contain a number of men of practical railroad experience. It is as absurd to expect a farmer or merchant to adjust railroad questions as to expect a carpenter to cut diamonds, and proportionately to their number there are, we think, as many honest railroad men as there are farmers.

GRAIN EXPORTS via NEW ORLEANS.

A FEW days ago the *Picayune* noticed editorially the fact that a very large amount of Western grain was seeking an outlet for export to Europe through New Orleans, and that it was understood that a great quantity was on the way here and would come during the next few months.

While the principle cause of this improvement in grain exports via this point is the better facilities now possessed by

New Orleans for handling this Western business, owing to the extensive network of railroads radiating from here to every part of the great West, still the immediate cause of the unusual increase that is predicted is the blockade in the shipments over the Eastern trunk lines, which has compelled shippers to seek other outlets.

The ease with which such an outlet has been found will do much to build up a future for this port, as the traffic once in this direction is likely to come here afterwards of its own accord. In the past the bulk of the grain coming here for foreign export came via the river in barges, and this is the case still. This has been due to the splendid system of floating elevators in operation, owing to the absence of adequate elevator facilities for handling bulk grain arriving in cars. The absence of this convenience prevented the railroads from reaching out for trade that could be easily induced to come this way under more favorable circumstances.

There is now, however, a fine elevator at Southport, which has rendered the unloading of cars direct into vessels easy and practicable, and has consequently removed in a measure the obstacles in the way of direct grain shipments to this point by rail from all parts of the West for export to foreign countries.

The result of this improvement in our facilities has been manifested almost daily during the present season and was made very conspicuous early this week by the arrival in a single day, over the road operating the elevator at Southport, of nearly a hundred carloads of grain.

OAT CLIPPING.

AS we are frequently asked to explain what the process of Clipping Oats consists of, and also what its benefits, etc., we have taken pains to give it considerable attention, and to investigate it thoroughly. For the benefit of our readers generally, we therefore submit the following:

Clipping oats removes the bearded ends, takes off all superfluous hulls, (which make bulk, but lessen the weight), polishes the grain, and raises the grade. As Oats are sold by weight, they grade according to the weight per measured bushel. It will thus be seen that by clipping them, a low grade of oats can be raised to a higher grade, not only greatly benefiting the grain, and making it more desirable and profitable as feed, but at the same time making it a source of much profit to the owner of a "Clipper." In fact, we have ascertained from various sources, that the business of clipping oats is one of the most profitable of any branch of the grain business at present, and likely to continue so for two or three years yet, to say the least, for owners of good stock all over the country are beginning to see and appreciate the benefits derived from feeding clipped oats, and as a consequence the demand for them must continue to increase. It has been plainly demonstrated that the bearded ends of oats are injurious to stock, and particularly so, since nearly all the dust and must in the grain accumulate in the chaffy open ends of the oats. The process of clipping removes these objectionable features, and as the grain is perfectly polished at the same time, it requires no further argument to make plain the truth of our assertions above.

We have been asked if it is possible to make more than one grade in clipping the same grade or quality of oats? We answer, yes; that is to say, oats for instance which weigh, 30 lbs. before clipping, can be clipped so as to weigh anywhere from 30 to 40 lbs. per measured bushel, and lighter or heavier oats in the same way; but we know of only one machine in this country which can be gauged to do this.

We have had suggested to us that bright plump oats are good enough without clipping; but this is a mistake. It is true

that such oats may not need much of anything more than polishing, but this will benefit them greatly, and the remark referred to only goes to illustrate more forcibly the necessity for clipping inferior grades.

We have been asked as to the shrinkage or waste in clipping. As we have thoroughly investigated the matter, we can reply to this question also. When cleaning oats with an ordinary separator or even with a fanning mill, there is more or less waste or shrinkage on account of the hulls and dirt which are either blown or screened out. This same shrinkage will of course occur in clipping, unless a plain sheet iron be used instead of a perforated screen, in such case all sand and seeds will be retained in the oats; the shrinkage on account of the bearded ends being ground off in clipping, is however, a very small item indeed, varying from 4 to 12 ozs. per bushel according to the closeness of the clipping.

The stiff bearded ends of oats hold the grain apart, so that it packs loosely. Remove these ends and polish the grain, when the oats will lie or pack almost as closely as wheat, and as closely as polished barley so that 100,000 bushels of clipped oats can be stored in the same bins in which it would be difficult to store 70,000 or 75,000 bushels *not* clipped. This illustrates fully the whole matter.

Our advice is, to clip your oats, and do not make the mistake of buying an inferior machine, just to save a little in first cost, but get a genuine *Oat Clipper*.

WE have received a copy of the "Railroad, Telegraph and Steamship Builders Directory," for 1890, published by the Railway Directory Publishing Co., No. 18 Cortland St., New York City. It is a handsome volume of several hundred pages, carefully compiled and of great utility to managers of the various departments in the business of railway and steamship companies and to all parties desiring to transact business with such companies. It is the only directory of the kind and the publishers are to be congratulated on having been able to produce such a valuable work.

(From our own Correspondent.)
OUR ENGLISH LETTER.

CARDIFF, Jan. 3, 1890.

FOR the late sown wheat the mild weather before Christmas was all that could be desired, but since Christmas we have been experiencing some very sharp frosts. The markets have been fairly stationary, but since the holidays the position of sellers has become stronger. In foreign wheats, Russian and Australian, there is a strong tendency, and buyers are seeking for this class of goods. The fog on Monday last was much felt at Mark Lane market, and the English millers as a rule declined to buy by gaslight so that it was a very slow retail market.

It is to be regretted that no authoritative decision has been yet arrived at as to the average quantity of flour yielded by a quarter of wheat, of given weight. In the statistics of the board of trade it is assumed that $3\frac{1}{4}$ cwt. of flour are equal to $4\frac{1}{4}$ cwt. of wheat, each being the equivalent of a quarter of wheat, or in other words that wheat yields nearly 81 per cent. of flour. This is considered totally incorrect, Beerbohm puts the yield at 72 per cent. and Dornbusch at 70. Consequently, between these two authorities reckon, the wheat equivalent of a year's imports of flour at a much larger quantity than the board of trade allows it to be, and thus, there is great discrepancy as to the total imports and consumption of bread stuffs. As an example the imports of flour in the last cereal year were equal to 4,096,608 qrs. of wheat according to the board of trade and to 4,789,689 qrs. according to Dornbusch. Such a difference is very puzzling to statisticians and it would be well to have that clear. Seventy per cent. is an odd calculation and is too low in these days of improved milling machinery. The calculation 72 per cent. is based on estimates collected from some five hundred millers.

A series of vice consular reports on the harvest in Southern Russia fully confirms the worst reports of deficiency. Taking 100 to represent an average crop consular General

Sandwith summarizes the reports as follows, in comparison with the estimates for 1888:

	1889.	1888.
Winter wheat	40	110
Spring wheat	35	120
Barley	45	95
Rye	30	110
Oats	20	80
Linseed	20	80
Coleya	20	40
Rape Seed	30	40

The quality of the wheat is inferior to that of last year's crop, and the weight is accordingly deficient. The consul general estimates the new crop at only about one third of the old one. As a set-off, large quantities of the crop of 1888 are still in hand, a good deal of it having been stored by the growers by a curious method. Pits were dug in clay subsoil and were then filled up with straw which was fired. Thus, the moisture was driven out, and the pits were then filled with grain and covered by this simple method; thousands of quarters of winter wheat were thus safely stored last winter.

A curious paragraph is going the round of the English newspapers entitled "Warning to Millers." This paragraph states that "In November last more flour was received from America than ever before. In November of 1888, only 637,000 cwts came across the Atlantic. The Americans now charge us for manufacturing wheat into flour, and if the journey across the Atlantic begins to reduce itself as it has recently done to a very few days, they will probably be thinking of sending us bread ready made." We are informed that the importance of the figures may be exaggerated. This may be a mere flash in the pan, but the danger to the milling trade in Great Britain is real. It shows where the competition will next tend to become keen. The only reason I can see for the publicity of these figures is to help the Master Millers in their dispute with their workmen. "The Millers' National Union" has its head quarters in London and out of a total of 2,000 operatives to be found in the London flour mills it has secured 700 as members. Want of a definite programme cannot be laid to the charge of the Union, as the Association is now demanding:

- I.—A working week of 54 hours;
- II.—Time and a half for overtime;
- III.—Double pay for Sunday labor;
- IV.—A uniform rate of pay for each section throughout the trade;
- V.—The adoption of all means on the part of employers for the securing of healthy and safe mills;
- VI.—The abolition of the "character note" system.

During the past month branches of this Union have been founded in Craydon, Cardiff, Bristol, Birmingham, Liverpool, and several other places. At a meeting held in Liverpool on December 15th in furtherance of the recently started Liverpool branch of the Union, addresses bearing on the work and object of the Union and the benefits it conferred upon its members whose interest it protects were delivered and it was stated at the meeting that during the first 15 days of December 150 members had been enrolled. At the conclusion of the meeting a number of working millers among the audience entered their names on the register. The members of the Union here, at Cardiff, are overjoyed at their victory. Messrs. Spiller & Co., however, state, that they would have fought out the question, but that the Union showed it could if necessary stop the mills of those masters who had tendered help in the firm's time of need. The arbitration award is entirely in the men's favour and those members of the Union who, at first, did not like the idea of arbitration are now overjoyed at the result. One of the committee of the Cardiff branch of the Union, stated to-day that in London the operatives have been very busy and during the past week addressed a letter to the London Flour Millers' Association setting forth their demands and grievances. To this document the London Flour Millers' Association has made a very weak reply and partly given way in many instances to the Union. On Saturday night last a mass meeting of the London operatives was held for considering the masters' reply. It was resolved at the meeting to further consider their position and to again write to the London Flour Millers' Association.

Mr. Henry Simon, the milling engineer of Manchester is very busy fitting up roller mills, and his representative who was here in Cardiff a few days ago stated that Mr. Henry Simon had 28 roller plants in hand at the present time.

This month the important milling patent case, Vangelder, Apsimon & Co. and The Sow-erby Bridge Flour Milling Society, is down for hearing, and it is expected to last several days, as a number of expert witnesses are to be called. The question at issue is whether rotary sieves so placed as to balance, can when worked by double cranks, constitute a patent.

Messrs. James Tucker, Limited, is the style of a public company with a powerful board of directors, which has been formed for purchasing and developing the business of Mr. James Tucker, grain and seed importer and corn miller of East and West Gate Docks, Cardiff; North Dock Basin, Swansea, Riverside, Newport; and Green Square Bristol. The share capital is put down at £800,000, divided into 10,000 £10 per cent. preference shares of £10 each. £100,000 19,995 ordinary shares of £10 each. 199,950 5 workmen's shares of £10 each. 50

£300,000

It is proposed to erect at Cardiff a new flour mill at a cost of about £85,000, while an oil and seed-crushing mill, with a plant capable of producing some 500 tons of linseed and cotton cake weekly, will have an outlay of £20,000. Moreover, malthouses and a biscuit factory are included in the scheme of construction, so that not much less than £120,000 will be spent. Mr. James Tucker, the vendor will transfer to the company the goodwill of the business with his valuable leasehold premises, plant and machinery at a price to be fixed by the well-known milling engineer and valuer, Mr. J. Harrison Carter of 82 Mark Lane, London, and of the price so fixed, one moiety will be taken in paid-up shares, so that the vendor identifies his interest with the prosperity of the company. The properties comprised in the sale include substantially-built ware-houses and corn-mills now in full working order, situated on the west side of the West Bute Dock, Cardiff, having a water frontage of 200 feet and covering an area of about 1,955 square yards; also an additional plot of ground with a further frontage of 220 feet, and an area of about 2,151 square yards, for proposed Flour and Corn Mills. A set of newly erected offices and stables on a block of land having 25 feet frontage, a depth of 118 feet. A block of land now occupied by three workshops, 84 feet frontage and 118 feet deep suitable for proposed malt houses. A plot of ground 28 feet, 6 inches by 118 feet for proposed biscuit bakery. A large grain warehouse, situated on the East Bute dock covering an area of about 1,120 square yards, having a water frontage of 100 feet, and fitted with hydraulic power additional land according sites for oil and seed crushing mills. There are also at Swansea a large grain warehouse and premises, situated on the North Dock basin, with a dock frontage of about 92 feet and covering an area of about 1,835 yards. The ground rents and the conditions of leases of the properties are reasonable.

There are about 25 mills in England sending flour into South Wales, subject generally to heavy transport rates; from Liverpool alone no less than six mills send flour regularly into this district at an average cost of 1s 6d per sack, which the company will save by local manufacture. The moderate dock charges and expenses ruling at Cardiff, compared with those of Liverpool and other ports, and the fact that ship owners are at all times willing to make a considerable allowance in consideration of a vessel coming to Cardiff for discharge are also most important factors in favor of the company, and give advantages of which other manufacturing companies show their appreciations by transferring their works to Cardiff. In view of these circumstances the Directors believe that a first class flour mill erected at Cardiff cannot fail to be a lucrative undertaking and having regard to the results of the present business they anticipate that the net profits will be at least £85,000 a year:

Estimated profit	£35,000
Preferential charges will be	
£80,000 Debenture stock at	
5 per cent.	£4,000
£10,000 six per cent Preference shares	£6,000 £10,000

Living an estimated balance of. £25,000

This sum is sufficient to pay 12 per cent on the ordinary shares now offered for subscription and to set aside a similar amount by way of reserve. The only large mill in the neighborhood which belongs to Messrs. Spiller & Co. Cardiff, Limited, was formed in 1888 and its £50 shares with £45 paid are now worth £75 each. There is little doubt that the knowledge of the formation of this company led Messrs. Spiller to settle the dispute with their men sooner than they intended to have done.

Next week when in the north of England I shall have the opportunity of more closely examining the "Victoria" purifier so that you may expect an illustration and description of this machine in your next issue.

I have just heard that the money required for James Tucker, Limited, has been subscribed so that the mills will soon be under construction.

Milling engineers are flocking here, and if the number of experts who have arrived here is the same for a few days longer they will be as plentiful as blackberries in autumn.

L. MAYGROVE.

REFLECTIONS.

Life is full of compensations. A crash in coal and clothing brings comfort to many a cottage. Ruinous prices for farmers' products may mean a fat larder and plethoric bank account for the mechanic. And yet we trust a sweet winter does not foreshadow a sour spring.

In solemn convention assembled, the astute granger declares "Boards of Trade and national banks are chief causes of agricultural misery." *Et tu, brute!* Thus does he strike down the last two unselish friends he has on earth. Even Job will boil when this comes to his ears.

English money irrigates the country through the channels of syndicates, and flows out again through rivulets of mixed marriages. Shall effete princes be permitted to gobble up our daughters and our bank accounts as well? A suspicion of scrofulous substance in our pork has caused foreign nations to demand a rigid inspection on the hoof. Does not a traditional scrofulous taint in scions of noble houses warrant retaliation in kind? What is good for four legs ought to be still better for two. Let prince and porker fare alike.

Throughout all, this fact stands out: Land values have diminished in free trade England, and tumbled terribly in protected America. Only—over there the interests of a few hundred thousand land owners are subordinated to the welfare of the manufacturing masses, while here the vast army of agriculturists are sacrificed to the greed of a handful of industrial enterprises. The few suffer there, the many here.

In the face of strenuous opposition, combined capital extends its sway, and even trusts again raise their drooping heads. Laws to thwart the natural tendencies of capital and to raise prices of farmers' product are difficult to devise. Farmers' expenses must be reduced. Combinations to rebuild cities, to undertake vast public works and reclaim waste lands should be encouraged, and conspiracies to control prices of raw products and necessities of life prohibited by law.

The Standard Oil company claims, while making vast fortunes for its managers, to have improved its product and reduced prices for the people. The meat syndicate reports smaller profits than individuals would willingly accept, though just where between the low priced steer and high priced steak the profit vanishes remains a profound mystery. As to improved quality, our own tenderloin now cuts as toughly at a quarter as formerly at a shilling.—*From Gillette-Hall's Annual Circular.*

CAWKER'S AMERICAN FLOUR-MILL AND GRAIN ELEVATOR DIRECTORY FOR 1890-'91.

THE above standard work will be ready for delivery in March, 1890. This will be the seventh directory of the flour and grain trade, issued by the publisher, and all who have used them, testify to their increasing accuracy and utility to the trade. Briefly outlined, the principal features will be as follows:

1. List of Flour Mill owners of the United States and Dominion of Canada, Post Office address, County and State, and where information is obtained capacity in barrels of flour per day of 24 hours, kind of power used (steam or water), roller or stone system.
2. Lists of Corn, Oatmeal, Rice, Rye Mills, etc.
3. List of Grain Elevators and Warehouses.
4. List of Millwrights.
5. List of prominent American Flour and Grain Brokers.
6. List of Foreign Flour and Grain Importers.
7. List of Mill Furnishers, etc.
8. Statistics valuable to the trade.

Communications from millers in all parts of the United States and Canada on any of the above mentioned points, will be thankfully received by the publisher. Further, any suggestions that will tend to add to the value of the work will be fairly considered. All letters concerning this matter should be addressed to E. H. Cawker, Milwaukee, Wis.

MODERN MILLING METHODS AND MACHINERY.

BY J. M. SERVOSS, FT. WAYNE, IND.

WITH the introduction and construction of roller mills in our land came the demand for men of genius, quick judgment and application in mechanics and milling out of whom should be developed competent milling engineers and experts. History shows us that great revolutions, whether political, moral or scientific, create or bring out great men who shall prove equal to the demand and the occasion. Our great revolution in milling drew out some good milling engineers and experts, and many excellent millwrights, many of the latter, however, have been spoiled in their aspirations to reach beyond their calibre. Of competent milling engineers in this country there are perhaps ten to fifteen and not more, and of thorough experts perhaps three times the number of engineers came quickly into prominence because of their quick application, long experience in milling and good judgment. But of so-called experts there sprang up everywhere many hundreds, who with the presumption of high wisdom, could tell you all the secrets and intricacies of roller milling methods, but many of whom could not spell the names of the days of the week correctly or solve a problem in simple interest. The humbuggery perpetrated and practised by these latter fellows upon the ever-credulous mill-owner has been enormous and outrageous, and while putting mill men to no end of trouble in their business, has drawn heavily upon our bank accounts. I have known many of the so-called experts who could manifest great wisdom in diagraming a mill on paper, but who never served a day in their lives as practical millers, and who could not adjust, start and regulate a single roller machine to save themselves from perdition.

The best and most successful mills that have been constructed, and containing the best systems of any in the country, are those where some good common-sense, practical miller of experience and judgment has acted in conjunction with the milling engineer during the construction, and has either given advice upon or supervised the diagraming of the mill. In my experience, which has been by no means limited, I have known but few mills where a milling engineer, who was not a practical miller, has governed and controlled all the details and methods of construction and system, that have proved a success from the start.

There are no set rules or methods that can be laid down and followed by millers in the arranging and diagraming of mills; there are no two mills having just the same line of machines and that are completed just alike, besides our American wheats vary greatly in different localities, and even like varieties require different treatment, so that a method proving a success in one mill, may prove a failure, or nearly so, in another, where the conditions are not the same.

Every head miller, in order to employ the best methods for the mill he is operating or is to diagram, should know his line of machinery thoroughly, and be conversant with the capacity and capabilities of each machine. A good, practical, sensible, experienced miller, who reasons well from cause to effect, and studies all the details of the mill, is worth more to the owner than all the experts and expert theories you can put into a ten-acre field.

While we may seem to be somewhat severe upon these so-called experts, I am not disposed to exonerate mill-builders and mill-owners from all blame. I have known good competent millers who were experts indeed, meet with failures from their methods in their endeavor to diagram a mill out of a lot of worthless traps called machines. Of course the expert and his diagram received all the condemnation, when in fact the blame should rest

entirely upon the mill-builder and mill-owner.

The best methods I can now recommend to a competent miller, (and I would not recommend any method to incompetent ones), in arranging and systemizing his mill are those which have proven the best and most successful with him. I am presuming that every miller in charge of a modern roller mill is fully competent in these days to diagram and systematize his mill, and if he is not, he should step down and out at once or take a subordinate position.

If your mill is working well and producing good results in all respects, let well enough alone. Don't keep changing for the sake of a change, without looking forward to better results. A change for the sake of a change may do in politics, but it is an expensive and oftentimes a disastrous luxury in milling. If your mill is working well and producing good results with the long or medium system, my advice is to stick to it; but on the other hand, if you have a short system mill (which is not too short) and it is serving you well, stay with it. I have my own opinions, and well founded ones in, regard to the relative merits of the long, medium and short systems, still I am not an extremist. Nor am I so radical that I must seek to condemn my brother miller whose views may not accord with mine, even though we may differ widely in some particulars.

Very much can be said of the long system, especially when employed upon hard wheats, and of the medium system upon the wheat raised in Nebraska, Southern Dakota, and portions of Iowa, and the short system upon soft varieties, but space will not permit me to enter into a discussion of them in detail.

I do not wish to be understood as opposing occasional and necessary changes in mills. On the contrary I admire the progressive miller, and whenever a machine or method in his system has served its time, and he knows from his experience and good judgment something new is required to balance up the mill, my advice is, put it in, and do it at once. Very much has been said and written about long and short systems, and it is generally considered as applying to the breaks, or reductions of the wheat, but the facts are that the more breaks you make, the more extended system you require all through the mill. The reason is obvious; you make more sub-divisions, or grades, of stock, each demanding separate treatment to produce the best results. Whatever system we employ in making the breaks, there are many points demanding our consideration and care; the amount of roller surface required for a given capacity, the proper corrugations to be used, the speed of rolls best adapted for the work, and the differential speed between fast and slow rolls. These are all very important points in good milling, but I find some or all of them neglected or overlooked by millers generally. It is evident to every common-sense miller that you cannot break wheat against wheat and do first-class milling. How often do we see the break rolls in mills over-fed. There should be sufficient roller surface so that every berry of the wheat comes in contact with the roller surface. Now the query arises what is the proper amount of roller surface? My experience says not less than 24 inches for each break to every hundred barrels capacity of the mill per day. With a long system upon the breaks, however, a poor first or second break is not so disastrous as with a short system.

Now we come to the question of corrugations. Which shall they be, sharp or dull, or a medium between the two? Shall they be shallow or deep, coarse or fine? I will give you the result of my experience on these points, without undertaking to say that the experience of others who may differ from me may not have proven as good, or better than my own. I contend that sharp or saw-tooth

corrugations are of no earthly use in roller milling. The reverse side of the sharp corrugation I have known to work well on some varieties of western wheats. For Indiana wheats the rounded corrugations with plenty of clearance, or open space, between each rounded part seems to be the best adapted, but the rolls should never be driven at less than 400 revolutions per minute for nine inch rolls, and with smaller rolls run the periphery of fast roll same speed as the nine-inch roll. Sometimes a considerably higher rate of speed than we have named is beneficial.

The corrugation should not be too shallow nor too deep; just deep enough to make the beads full and bold. Differential of 2 $\frac{1}{2}$ to 1, increasing with the breaks 3 $\frac{1}{2}$ to 1, I think will give the best results. The differential for smooth rolls should not be more than 2 to 1 on any stock, as the fast roll will heat too much, and thus heat the material passing between the rolls. But some one asks us right here for our opinion in regard to the number of corrugations per inch best for break rolls. We answer, first if you must use the splitting process on first break, employ smooth rolls for that purpose, giving them a differential of 3 $\frac{1}{2}$ or even 4 to 1. You will find this superior to any other device for splitting the berry at the seam or crease, making a cleaner break and causing less waste of good material. For the second break I would not use less than 16 corrugations; for the third, 18 corrugations; for the fourth, 20 to 22 corrugations; and for the bran rolls, 26 to 28 corrugations.

I have omitted to discuss in regular order one branch of operative milling, that is of paramount importance, and that is wheat cleaning and wheat cleaning machinery. How grossly this branch is neglected by many millers in these days! I once heard a man say, (he was not a miller, although he had charge of a very good mill,) that it did not matter about our wheat being thoroughly scoured and polished, as his first break roll and scalper would complete the wheat cleaning for him, and after looking through the mill and investigating the work being done, I wondered within myself how much, or rather how little he had cleaned his wheat.

Great reliance has been placed by many millers upon the method of splitting the wheat for the purpose of cleaning the grain and removing seam impurities. There is no one point in our milling systems where a greater amount of humbuggery has been taught and practised than at the first break, when it was being done for the purposes we have mentioned. Think for a moment of the method of splitting the wheat and exposing a portion of the flour in the berry, while the impurities were still mixed with the wheat, and then trying to separate these impurities from the grain without their adhering to the exposed flour parts. This never has been accomplished successfully, I care not what claims some may set up for having done wonderful things at this point in milling. Seam or crease dirt is a bugbear and a humbug. If we see to it that our wheat is thoroughly cleaned and polished before being sent to the rolls, all the seam impurities you can take from it by the splitting process you can put in a very small pipe and smoke it.

There are several good wheat cleaners in the market, and many very poor or ordinary ones, if a good miller will examine and test them for himself he will find no difficulty in selecting the best, but when selecting your cleaners, make no mistake in getting them of ample capacity for your work. You cannot crowd a cleaner beyond its capacity and clean your wheat well.

Having given our attention to wheat cleaners, breaks and rolls, we now come to the point of separations of stock; these should be made clear, cut and decisive at every point necessary in the system, and a mixture of stock or grades should be avoided at any and every point in your

system. After separations have been made, treat each grade or kind of stock separately upon your rolls, and so far as possible in your bolting system.

We have now reached that important branch in modern milling, about which good millers have dreamed and pondered in their sleeping and wakeful hours, and over which they have struggled and toiled for years—the purifications of middlings—and still we are wont to hear good millers exclaim: "My middlings are not purified as they ought to be."

What a contradiction of ideas and methods exist among millers about purifiers and purification, some trying to purify the bran pile and others tackling the product from the flour spout, while another is sending enough stock to one small purifier to check a locomotive running at high speed, and the worst brain-cracked of all is one who will persist in sending the returns or cut-offs of a purifier back to itself in order to bury the whole concern if possible. If you would purify your middlings with air, put no more stock on each machine than will permit the air to pass through the stock freely the entire length of the machine, first dusting your middlings by the mildest action possible, grade them, and purify each grade by itself, watch the result of this method, and you will grow happy. We must affirm, however, that since the advent of roller milling here there has been less improvement and advancement in the methods and machinery used for the purification for middlings than there has been for the treatment of any other stock in the mill. In this important branch of the art of milling, we are very far behind the times, and I with many others, am anxiously looking and hoping that some practical inventive genius in this country may soon surprise us all with some new device for treating middlings that will send the expensive, cumbersome, most imperfect concern we now use to the scrap pile, never again to be called into use by any progressive American miller. "Tis a consummation most devoutly to be wished."

And now we approach the methods and devices employed in our bolting systems as a tender-foot would approach a cowboy on the western plains—the centrifugal systems. The multitude of round reels and flour dressers, with the systems advised by the makers of each, and not to be lightly passed by, is the old style hexagon flour reel that has aided in making many men rich. These all demand from us serious and thoughtful consideration and the exercise of profound judgment.

Centrifugals are useful machines in a mill, as a bran duster or wheat cleaner is useful and essential, but it will require far more highly colored and gaudy advertisements than we are wont to see in our milling journals to convince any rational miller that an entire centrifugal system is productive of first-class milling.

The slow motion reel that acts mildly upon the stock and has a reasonably good capacity is gaining favor among the better class of millers, but we have nothing yet in the line of bolting machines that is greatly preferable to the old style, or rather new process hexagon flour bolt, except that they occupy less room, and some of them require less power for driving. Whatever machines or methods we employ in our bolting systems it is essential that we may have ample capacity throughout the mill to do the work easily at every point; this will be found to simplify your system very materially, and save you much perplexity.

Because some maker of a special machine tells you of the gentle action, and the enormous capacity of his machine, do not swallow it all as naked truth. Mild action and large capacity are not harmonious terms to be applied to a flour bolt or any other machine we use in modern milling. A machine may possess one of these features, but if it does, you

will look in vain for the other. The perfect bolting device like the perfect roller machine, purifier, grain cleaner and other special milling machines is not yet invented and perfected. We may look forward to still greater improvements in all the machines as well as the methods to be employed in the highest standard of milling.

We predict, however, that the advancement will not be as rapid as during the past eight or nine years, but far more substantial and permanent. We should all remember that the best mill or mill machinery, while costing somewhat more when new, is by far the cheapest to us in the long run. Many of you, no doubt, have learned this in the trying and expensive school of experience during the past few years.

[From our own Correspondent.]

OUR BUFFALO LETTER.

BUFFALO, Jan. 12, 1890.

Our Spring wheat millers, at least a large majority of them, are running very light and as for the straight winter wheat grinders the wailing is something dreadful to listen to. The former do not complain of a scarcity of orders, being apparently satisfied with the business in hand and future outlook but the latter lament the decline in the consumptive demand for their particular grades.

"What will become of us winter wheat millers," exclaimed one who had enjoyed a good custom for many years. "What will you do with us?" he asked of a leading spring wheat miller. "Buy you up," was the laconic reply.

Whether it is the push on the part of one and a lack of it on the part of the other is an open question, but the weight of evidence is strongly in favor of the "pushing." Buffalo spring wheat millers believe in printers ink and as their situation is most favorable for getting the cream of the Northwestern crop of hard wheat the combination is productive of good results.

To give reliable quotations of flour in this market is an utter impossibility. The card rates are \$5.50 per bbl. for spring patent and \$4.50 for best winter, but we all know how different it is when one really wants to buy.

The growls concerning freight rates which at one time threatened the very lives of railroad agents here, have ceased entirely and it is presumed that the end sought in the direction of easier charges by rail has been amicably attained. Special rates on the Rome, Watertown and Ogdensburg line have been abolished. This has all along been a very independent road. The "special rates" given by its agents left nothing for the shipper heretofore, and what can be expected now.

In the test case of the Buffalo elevators in which a conviction for violating the MacEvoy elevator bill was secured in the Supreme Court here and the case then taken to the Court of Appeals. A remittitur was received last week making the judgment the same as the criminal term of the Supreme Court. The attorneys for the defence have decided to take the case to Supreme Court. Here is an instance where the law overrides the ownership of personal property.

The appeal is taken to the Federal court on the ground that restriction to the amount of charges for use of property takes the property from the owner. A clause in the constitution of the United States guarantees to every man the right of life, liberty and property. If this law would hold good, the state could force the elevator owners here to store the grain for nothing. Does the English syndicate who is now figuring for their purchase want the elevators under the circumstances? I know not.

Our elevators in fact are at the mercy of a few ignorant, pig-headed canal agitators, having at their heels a following

even more stupid than the mules which tow them to tide water. Instead of benefiting the canal trade, they are actually driving grain away from it. The enforcement of this law will result in making the railroads richer and in the words of the lamented Senator John Ganson "grass will grow in the bed of the canal before many years." Last year the railroads carried within two millions as much grain as did the canal, an increase of 14 millions over last year for the rail. Elevator men will aid the rail whenever it will be found to their advantage and interest to do so. Other changes are proposed by these self-styled friends of the canal, but really allies of the railroads; which if adopted will hasten the day of total annihilation of that great freight rate regulator for grain on its passage from the west to the high seas.

In the case of Wilson S. Sherman who skipped to Canada to avoid arrest on the charge of stealing 600,000 bushels of grain the Canadian Judge decided that forgery had been committed and he must come back. This is good news here as it is believed that he has all the swag or can tell what became of it. The decision of the judge in this case in spite of the eloquent and learned counsel engaged from this side to prove that his case was not an extraditable one goes to show that even Canada is becoming sick of harboring rascals. Brother "Steve" his old elevator friends will be interested to know is looking as chipper as ever and it is believed that his indomitable pluck will carry him through this case as it has through many another. "Steve the hustler" as he was known here is under \$22,000 bail and his bondsmen are not in the least afraid he will take to his heels. "I am not made of the stuff that runs away," said he when arrested. He is confident the court cannot convict him of any of the dozen or two counts found unless perjured testimony is used and he certainly has lost his grip if a perjury can get the best of him.

The annual meeting of the Merchants' Exchange took place January 8th, and a "reform ticket" was elected. These trustees, with one exception, were picked from the regular tickets, and the popularity of the men chosen was proven by their election. The expenses of this institution were nearly \$26,000 for the year, and it is thought a reduction can be made without in the least injuring the efficiency of the board.

The one exception in the election of trustees on the reform ticket was Mr. George Urban, Jr., and he showed his appreciation by taking the boys out for a feed of spaghetti and champagne.

Of course the gripe caught our millers to a large extent, among its victims were Mr. Urban. His wooden-shoe cure did not save him. Mr. H. J. Harvey was also on the sick list, but his partner, Mr. Henry would scorn a disease so foreign to his country; he believes in the old maxim that an ounce of prevention is worth a pound of cure.

Mr. George B. Matthews of the Great Falls Mills is in New York, is very ill at the present time, but hopes of his recovery are entertained. Mr. Mathews left about a year ago on a pleasure trip through Europe, and on landing in New York a week ago was too sick to be moved to Buffalo.

Mr. Leonard Dodge, the North Buffalo miller and manager of the Frontier elevator, and family left for an extended visit to California. Mr. A. R. James returned from the old homestead in Boston after a month's visit to "grandpapa's."

The local wheat market continues to rule firm for hard Duluth wheat, no attention being paid to the fluctuations at Chicago. The fact is that there really is no wheat here for sale at present except small lots owned by New York parties. The bulk of the 3,000,000 bushels is held for high prices and the general opinion is that a good round profit will

be made on it before the opening of navigation. No. 1 Hard has sold steadily at 91c to 91½c; No. 1 Northern 88c to 88½; No. 2 Northern, 85c to 85½c; winter wheat is dull at 85c for No. 2 red and 84 for No. 1 white on track.

Grinnell's automatic sprinklers did good service at the Coatsworth elevator fire. Men who were on the spot say the blaze under the conveyor belt was something tremendous before the sprinklers opened but when they did, the fire died out almost instantly. Damages were adjusted at \$155.

MILLING AND MECHANICAL NOTES.

[Condensed and compiled from various sources for the UNITED STATES MILLER AND MILLING ENGINEER.]

It is said that the following will make a good flexible paint: Soft soap 2 oz; boiling water 12 oz. Dissolve and work thoroughly into ordinary oil paint.

PROF. C. Richardson of the agricultural department says: "Other things being equal a barrel of Western flour will make more bread than a barrel of Eastern flour."

To make self-raising flour, a correspondent says, mix by weight 47 parts of bitartrate of potash and 21 parts of bicarbonate of soda. Mix thoroughly in proportion of a teaspoonful to a quart of flour.

It is a fact well known by some millwrights and ought to be known by all that the bolting machinery in a mill situated near a large lake or the sea coast should be clothed differently from that of a mill located a few miles inland.

THE year 1889 will be a memorable one in the annals of flour milling. It has witnessed the first transfer of American mills and elevator systems to a syndicate of British capitalists; but no one will venture to say the last. It has seen the harvesting of a spring wheat crop which leading millers pronounce to be of finer quality than any ever handled before; it also marks the birth of a movement to secure for the millers of this country a favorable entry into the growing markets of South America.—*The Roller Mill*.

SQUARE ROPE DRIVING. Some experiments recently made in India with leather ropes of a square section are deserving of attention. Square leather ropes have for some time been used in England, and with success. They are especially suited for what are called "quarter twist" belts not being effected by the diagonal strain as a flat leather belt is. The sections are square, equilateral, and the grooves in which they run are made to an angle of forty-five degrees, so there is a perfect fit of one half the surface of the rope, and more than is possible with a flat belt of equal weight; not only this, the traction is more because of the angles.

The square leather ropes employed for main driving are about one and three-fourth inches square, made up of layers of leather cemented so the whole is uniform and continuous. A rope of this size weighs a pound for each foot of length, and will sustain a pull of 800 pounds. A single rope of this size will at a speed of 2,500 feet a minute, transmit 25 horse-power. They are, however, driven at a much higher speed than this, in some cases to 6,000 feet per minute; a safe or suitable speed is from 4,000 to 5,000 feet a minute.

We think these square ropes worth a trial, and no doubt the leather band manufacturers would be glad to furnish such ropes, as they could be made up from "small stock."—*Industry*.

We take the following extract from an address before the Junior Society of Engineers, delivered by Prof. John Perry, D.Sc., F.R.S., at the Westminster Palace Hotel, London, which we think will be both interesting and suggestive to many of our readers:

"Gentlemen, we are all specialists now,

we devote ourselves to particular branches of our profession, but all the time, each of us has a general knowledge of other branches of the profession. Each of you has some special knowledge, either of hydraulic machinery, or stationary engines, or locomotive engines, or gas engines, or marine engines, or boiler making, or cranes and hoists, or machine tools, or some other branch of the profession. But if a man called himself a mechanical engineer who had not some general knowledge of all these branches, would you not look upon him with a certain amount of contempt? And you would be right, for the scientific principles of all the branches and their application and the special contrivances of all, enter often in most unexpected ways into one's own special work. The gist of this address is that the electrician has become a member of your profession. My own belief is that ten years hence he will be of as much importance in the profession as the steam engineer, and that no man having a right to call himself an engineer will be without a good working knowledge of electricity; for this knowledge will give him a new weapon, which he can wield with unexampled certainty, and which, in my opinion, will develop into the most powerful weapon at his command. I could already give you many examples of the way in which a knowledge of electricity will enable you to develop your special branches of engineering, such as that of electric welding and the electric tempering of steel, and many others.

"But I will end this address by asking you to put some faith in the following statement: You know that the best steam engineers never expect to obtain more than one-tenth of the total energy of coal as given out by a steam engine, and that in some small engines only one-hundredth is given out. The idea that we are wasting at an enormous rate the energy stored up for us in coal by nature during millions of years is one that sometimes becomes oppressively horrible. Now, I pointed out in 1881 that if coal or gas were burnt in a voltaic cell as zinc is burnt, and an electro-motor were used, we could utilize as mechanical energy not merely one-tenth but nearly nine-tenths of the energy of coal. I pointed out then that coal gas could be burnt in this way, but there were two difficulties—(1) the apparatus required was too large per horse-power developed; (2) the apparatus required was too expensive. The first of these difficulties has already been got over by a correspondent who is in some sense my partner. We see our way to developing one useful horse-power per cubic foot of volume of apparatus. Unfortunately the difficulty of expense still remains. But I am firmly convinced, and I have good reason for my belief, that all the difficulties will be got rid of, and that coal will actually be burnt in this way. Even to those of you who may not be troubled about the general question of economy, the mere possibility of an armor-clad vessel being able to carry enough coal for a voyage at full speed round the world, must appear to be an important result. With the ideas of steamships carrying very much greater cargoes and going at greater speeds, and other ideas which must strike you all as the result of the above economy, I will leave you, but I must confess that the general question of economy and its influence on the progress of the race appeals to me with infinitely greater force.

It is an old custom in Germany that the day before a wedding a so-called "Poltersabend" takes place. The relations and friends meet in the bride's house, dressed up as butchers, bakers, servants, or anything referring to the new household. Plates, glasses, and old dishes are smashed before going home, this meaning luck and happiness for the young couple. The origin of custom is Slavonic.

THE COMING MECHANIC.

THE coming mechanic, says an exchange, bred in training schools, will be a very different man from the mechanic of the present. Even the young mechanic who is now learning in the shop, will, in some very important respects, be at a disadvantage when he comes into contact and competition with the young mechanic who is now in the school. In several years these two young men will be ready for serious work. The shop graduate is likely to have bad habits fastened on him, from which the school graduate will be free in a measure. The shop graduate may be "practical," and the school graduate will be equally "practical," with the added advantage of wide theoretical knowledge. The shop graduate may be able to do all the work planned or designed for him, and the school graduate will be able, not only to do the work, but also to do the planning and the designing. In every way, the school graduate will have all the good points of the shop graduate, with added good points due to wider information, while he will lack most of the bad points of the shop graduate. All this means that the coming mechanic is to be a very different person from the present and the past mechanic. There will be a great change for the better wrought by the modern training school. The boy in the shop may be set to turn a wheel. He simply sees it in position, and he does what he is told to do, without asking or knowing the reason why it is done. The boy in the training school goes through the same practice under full instruction concerning the nature of the material, the proper cutting speed, and everything else connected with the job. The shop boy finishes, and is simply tired muscularly or nervously. The school boy finishes, and feels himself master of that particular job. Can any mechanic fail to appreciate the wide difference between two mechanics trained in ways so different?

CORN OIL.—One of the latest of the new products which modern science every now and then throws upon the world is corn oil. The maize which is now grown in the United States at the rate of some 2,000,000,000 bushels per year has been experimented with and found capable of yielding 3½ per cent. of its weight in oil, the germ of the kernel being the part from which the oil is extracted. The new material is of a pale yellow color, somewhat thicker than either the olive or cotton-seed oil, and does not seem to be readily available as a substitute for them, but it is well adapted for lubricating purposes, and may be used as a salad dressing, while it seems to be desirable for liniments. The discovery is all the more interesting as the germ of the corn has to be eliminated in the manufacture of starch, being thus a by-product for which no use has been found till the date of this discovery, which possibly may pave the way to an important addition to our list of manufactures.

NIAGARA FALLS.

In the summer of 1888, Mr. Charles Graham, of New York, one of the finest aquarists in the country, produced a water-color of Niagara Falls, remarkable in its accuracy of drawing, in its marvelous coloring, in its masterly handling of tones and effects, all of which have been perfectly reproduced. As this point of view of this picture is near the Michigan Central's station at Falls View, and represents its vestibule limited train at that point in the foreground, it obtained possession of the water-color and the copies made therefrom. The latter are printed in colors, 15½ by 22 inches, upon paper 22½ by 28 inches in size, and when framed cannot be distinguished from a genuine water-color save by an expert.

They bear no advertising, save what is involved in the title, "MICHIGAN CENTRAL TRAIN PASSING NIAGARA FALLS." A limited number of them will be furnished to the public at Fifty Cents each, which is very much below their commercial or their artistic value. They will be securely sent by mail upon a paste-board roll, without extra charge, but not more than two copies will be sent to any one address.

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1242

things ever published, and the whole matter is so simple that it is a surprise to every one that it was not thought of long ago. For instance, take the first example given at the left: say 8 times 3 are 24 and put down both figures. Carry one and say 5 times 6 are 30, and put down both figures. (Always carry one.) Of course this rule does not apply to all numbers, but it applies to an immense number. By three minutes study of this lesson as given in the above named book, the smallest school children can tell at a glance which numbers will work and which will not. It is more than likely that you have spent hours finding the value of certain things at certain prices, when the work could have been done in minutes. The rule applies to whole and fractional numbers of two, three and four figures. This lesson represents only one one-hundredth part of the book. The work is brim full of new points. Here are the titles of a few of the other lessons:

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(Written for the UNITED STATES MILLER.)

MILLING THOUGHTS.

By J. F. MUELLER.

IN the construction of mill-building, exterior attractiveness is often left entirely out of the question. But there is no reason why it should be. Elaborate architectural display would, to be sure, be out of place, but a mill-building may just as well be well proportioned, neatly designed and agreeable to look upon, as the reverse. But the prime object, of course, should be utility.

The brick or stone walls are more generally put up in accordance with the A B C's of architecture than are the interior supports of the building. With the walls it is regarded as necessary to make the lowest parts the strongest and heaviest, inasmuch as they have to support the others, whereas the rigidity of posts, girders, joists and floors is often sadly neglected. To begin with the posts require rigid, substantial foundations. Some mills require to be lined up regularly year after year, owing to the uneven settling of floors, which are often supported by girders, posts and joists too flimsy for any ordinary barn.

It is not uncommon to see roller mills or any other fast running machines quivering like a basin of water on a hot stove. This is largely due to weak floors and weak supports which are kept in a constant vibration and which is in turn transmitted to the walls of the building. A shaker used as a receiver for wheat recently came to my notice in the extreme top of a mill. This shaker was a home-made affair and was rather irregular in its motions. The floor on which it stood would vibrate with it and the incessant irregular motions began loosening the mortar in the brick wall in one end of the building. Fast running machinery should be kept out of the upper portion of the building as much as possible.

There is a gradually increasing tendency to handle grain and ground material in its route from the receiving bins to the finished products in such a manner as to prevent unnecessary wear. A gentler action is gradually being introduced and applied in various ways and at various stages of the process. The harsh treatment to which grain was subjected by some of the smutters of the past is partly overcome in the more modern machines. The tendency to abrade the bran and breaking and cutting wheat was highly undesirable. There is hardly a cleaner on the market now, however, that will cause injury to the bran. Not only in the cleaning of wheat is it important to use every precaution to handle the stock gently, but after the wheat is pulverized or reduced, mild treatment is still more essential. Nothing could be a greater wear and tear than the pioneer burr mill. Perhaps the middlings purifier was the first machine to be a part relief to the harsh treatment exercised by the millstone and the old hexagon reel, and soon suggested the milder treatment of the grain in its various reductions, by bringing to the front the roller mill. Since the advent of the roller mill, nearly every important change has been that of handling the stock more gently. The splitting of the wheat berry and then subjecting it to the hexagon scalper clothed with wire was about the harshest treatment ever attempted, and was universally indulged in at the start, and there never was a theory to which millers adhered more determinedly. The hexagon reel is daily loosing ground. The round reel in its various forms has put in its appearance. First in the form of a centrifugal. To use it as a universal bolter for all kinds of stock was soon demonstrated to be a failure, owing largely to its harsh treatment. The scalper had to precede it, and for a number of years the centrifugal became a favorite with a great many, as a finishing or flouring reel. It was no doubt the centrifugal that suggested the round reel and the inter-elevator

reel. The centrifugal is now confined principally to bolting low grade or soft stock. The round and the inter-elevator reels are the principal bolters at this time, and the old style hexagon reel is fast being replaced by them. Millers who are grinding for middlings see the necessity of handling them with greater care until they are purified, and the sieve scalper for breaks is now receiving a prominent place in many of the modern mills. In the system of purifying middlings, the coarser middlings are usually sent to a middlings aspirator in preference to a sieve purifier. By subjecting them to a current of air instead of a sieve all foreign substances may be removed fully as well as with a sieve and not wear the middlings. For medium and fine grades of middlings nothing has yet been invented to take the place of the sieve purifier. To less pulverize the middlings has also been one of the principal causes of fewer breaks on wheat. There was a time when quite a number of mills made as many as eight breaks. To say that the flour made in a mill of this kind showed lack of strength is asserting it mildly; it simply "looked tired." The breaks, however, have gradually dwindled down to fewer in number. Three and four breaks are now most universally used. Some mills still have five, but very few are any longer using six.

Upon entering a modern flouring mill one cannot help but notice that conveyors are no longer used only where it is absolutely necessary. The conveyor is a scourer in every sense of the word, and with the exception of conveying wheat or finished flour ready for the packer, it should be avoided wherever possible. A careful observer will take notice that middlings traveling any distance in a spout have a tendency to become pulverized. Thus middlings that are absolutely free from flour upon leaving the grader, are pulverized to some extent by spouting them any distance before they reach the purifiers. The route of the middlings in every mill should therefore be as short as possible.

One great fault with many bran dusters is that their action on the bran is too severe, scouring the fragile coating until it becomes partly pulverized and mixed with the flour that is being dusted out, making it sometimes a doubtful product for even the low grade flour.

A good miller will do more with a simple outfit of machinery than one less careful will do with a great deal more. It is the little things that make the difference between good milling and poor milling, and nowhere in the whole treatment from bin to sack or barrel is the necessity of removing dirt of greater importance than in the start—on grain before and after broken. The first chance which the miller gets at any material, no matter at what stage of the mill, is the best. It is an opportunity, which when once lost, is not to be easily regained, an error made at any stage of the mill cannot well be repaired, if impurities are not removed in time, nothing can be done to repair the evil.

A reliable automatic scale is something that is needed in every mill whose owner is at all anxious about knowing just what work the mill is doing. An automatic scale facilitates greatly the taking of accurate yields, and that fact alone makes it all but indispensable.

There is much disastrous competition going on among millers, solely because many deceive themselves and others about the amount of wheat required to make a barrel of flour. There are but few millers who keep fully posted, and who strive to keep informed as to the details of the mill's operation. Many claim to keep posted, but it is more a matter of guess-work. In order to have a positive knowledge on the cost of manufacture every item of expenditure connected with the mill, the office, or the sale of the flour

must be included. Unless a mill-owner knows what each barrel of flour costs, he cannot easily determine whether or not any given price will leave a margin of profit. He will also be at a loss to know when it would be more profitable to shut down, if trade should be in such condition that it would be impossible to make any money.

CORRESPONDENCE.

WESTERN NEEDS.

DIRECT EXPORTATION OF GRAIN.

WHEN one reviews the changes that have occurred in the last 34 years, it seems like the experience of a veritable Rip Van Winkle, and yet I claim to be a young man and expect the next 30 years to do as much as the past 30. Excuse me, I am not going into biography, but it is the time of the year when retrospection is in order, and as you have kindly permitted me space, some little review of commerce and agriculture in the South-west for the last 1/2 of a century may be in order.

Thirty-four years ago I shot deer on the site of Kansas City, and went from the Missouri river west 100 miles to find countless herds of Buffalo, and not a fenced field or cabin in all that interval. Well, the buffalo and deer have gone forever, and the settler came with his cabin and corn-patch, and his doubts as to whether the so-called great desert would do.

The frontier-men's phase soon passed, doubt yielded to comforting certainty, and the old cabin gave place to the better and more commodious houses, and they in time are, with the increase in wealth, giving place to such surroundings as leave Kansas and Nebraska farmers probably the best housed people in the world. These changing conditions have come with the magic and mastery of much labor. So much indeed have western men been engaged in rescuing the wilderness, building cities, farms, roads, bridges, school-houses, railroads, court-houses, stately capitols, etc., that the seemingly minor economics have been neglected. All the same it costs money and lots of it, to get these things, and as we are all agricultural or nothing, the solution of our economic difficulty naturally comes through the farmers and traders. The Granger movement of a few years ago, was a good move. It may have been an abortion and died in the hatching, from want of being nurtured with the vivifying power of well-digested thought, leading to well-directed and united action. But there has sprung from it that vigorous power, that has developed the present Farmers' Alliance—a very vigorous infant indeed, and he has clasped hands with that other energetic infant, the Labor or Trades Alliance, and the man that doubts, that they two united will not work out their salvation, is blind—blind as a bat. It may be slow, it will and must be slow, but it is inevitable, that these people with "Righteousness" as their watch-word and "Thoughtfulness" as their guide, must win.

But what has this to do with exports, say you; much—everything. Western men think to a purpose, and the middlemen must fall into line, so with transportation people, and thus place the producing West in a nearer touch to the millions across the water; the farmer of Kansas must say directly to the buyer: "Here is my labor in food, give me your labor in money." I have investigated the matter thoroughly, and know there is no bar whatever to the farmer at every railroad station in the West, selling his product, not only to sea-board European towns, but to interior towns in Europe also; and although I am neither a prophet nor the son of a prophet, this thing will happen—and soon, and goods will be offered and sold on their merit and on their merit alone, in spite of that worst commercial iniquity of the age called "Grain Inspections." How is this export business done

now? Let us trace it if possible on the item of grain from Central Kansas:

First—The grower of the grain is the most unlucky handler of all as a rule.

Second—The country grain dealer generally the brother in misfortune with the farmer, subject to the decision of that terrible inspector, and the charges of the elevator man at the Missouri River—well he ought to be paid for his labor and the chances of these ever impending pitfalls, and of course he gets his pay.

Third—Comes the Missouri River broker, slick and dapper, he must be paid and is paid for his risks in selling and guaranteeing a grade as uncertain at the sea-board as the one he buys on at the Missouri River. Fourth—The sea-board buyer—a heavy commercial swell, in his own estimation, with an expensive establishment, paid for as they contemptuously assert by the Granger out west.

Then this thing is repeated all over again across the Atlantic, and all handlers on that side from the heavy importer to the dribbling retailer, gets his toll out of it, and it is again complacently charged up to the horny-handed Granger, until one is inclined to say, in despair of justice, "How long, O Lord, how long." There is only one answer to each one interested: Gird thyself; put men that are heart and soul yours and in your interests into legislative bodies.

Many people may think, I speak of Grain Inspections too severely; not so, for is it not the basic fact in all grain gambling? How would it be possible without this thing of contract grade of corn or wheat for any disreputable vagabond to stand up and double the price of every poor man's loaf and to say to the unfortunate man that has sold with all honest intent, "Give me the last ounce of thy flesh?"

Similarly, these Shylocks depress values to suit their nefarious purposes. How could they do it if contract inspections did not sustain them? How could they do it if grain was sold on sample as it should be?

I know that the millers of the land agree with me in their views of the speculative abuse of Grain Inspections.

A prominent European grain man has said to me, that he preferred to buy on sample all grain as they buy flour; and it is the correct way. As a western shipper of corn from Central Kansas to the seaboard, it is hard to speak placidly, for in common with thousands of poor devils like myself in the State that pay the railroads two bushels of corn for the privilege of getting one bushel hauled to the sea-board, our visions are distorted and in our dreams we see, say, a triumvir of railroad kings in royal purple up some where in their imperial court in Jupiter, waited on by an efficient corps of wise interstellar magnates of the first water, whose united wisdom, we think we hear it said, regulates things beautifully, beautifully, but it is hard to see through it.

I once rented a farm from an excellent man, that permitted me to haul him one-third of the product to the town where he lived, 10 miles off, for the rent, and whenever I think of paying two bushels for the privilege of hauling one, I cannot help thinking all the farmers of the State are tenants, and the railroad magnates are the landlords but I guess this is a mistaken notion. I will figure on it.

I speak with a knowledge of all the mediums used in grain handling, and of the feeling toward the baleful and uncertain inspection system, when I say that the time is near when the Western Farmer and the European consumer are closer together than ever before, and the beneficial consummation is not far off when grain speculators and inspectors will be a thing of the past, and that direct sales of sample goods in the West will become more and more the method of the future. The work is going on nicely. One must remove obstructions before they build.

Very truly, JOHN M. CAIN.
ATCHISON, KAN., Jan. 1890.

MILWAUKEE REVIEW.

NOT much can be said of the condition of the milling business or the flour market at this time in a paper like this. If we had access to the "balance sheet" of the different mills, some things might be said that would furnish interesting reading. The 30 days just passed which include the last 15 days of the old year and the first 15 days of the new is always a time of anxiety with millers; their operations are necessarily so extended that without the most thorough system of bookkeeping, few can tell for a certainty whether the balances will be found on the right side of the ledger, for it is not uncommon for even millers to find their balance on the wrong side, when at this time of year they have stopped all the wheels, looked up all the odds and ends, calculated the probable accounts, settled with all dealers for wheat used in keeping their plant running and last but not least whether after looking over their machinery, they must this year spend \$50,000 for a new mill. It is astonishing to the uninitiated how often these bills for new mills come around.

The ordinary consumers of flour never think of these things. We sometimes hear people reason like this.

I am paying \$6.00 per bbl. for my flour and wheat at say 75c, from these premises they begin to figure the profits to the miller thus:

4½ Bu. wheat @ 75c.....	\$3.35
Expense of manufacturing and selling, say.....	50

Total cost to miller..... \$3.85

Profits at the rate of \$2.15 per bbl. Thereupon they begin to d-n the grasping miller, forgetting or disregarding the fact that only 40 per cent. at best will make \$6 flour, the balance of the 4½ bu. has to take a price ranging all the way from 80c to \$3 per bbl. Very much going at \$8 to \$12 per ton. And who, may I ask, fixed the price of manufacture and sale at 50c per bbl.? And then, have you taken into the account, the man who buys the flour from the mill and delivers perhaps a quarter bbl. at a time anywhere in the city, and as likely as not waits on you 30 to 90 days for his pay? All these things go to increase the price of flour to the consumer.

Having said so much for the miller, I want to say further that the bread bill of a family for a year is not a large bill at the worst. Thirty-six dollars a year will keep most any family in bread from \$6 flour. Your meat, butter, sugar, tea and coffee bills will greatly exceed that figure. And again, the best flour is always the cheapest. No matter how cheap low grade and flour from No. 3 wheat may be, because they are more or less lifeless, and if not spoiled in the baking, are wasted on the table because not so palatable.

I cannot believe that the evils of which our Baltimore friend "Oriole" speaks are general, but it is too true there are such millers. I can most emphatically agree with him that "the wise miller above everything keeps his flour strictly uniform on all occasions."

Bread is the staff of life and when that article is high business therein is brisk, and all other lines of business sympathize and all goes merrily on. No one to complain because all are busy, the price to the individual is of no account so long as he is kept busy earning it.

As a brisk and healthy tone of the cereal market is the one thing we need to stimulate all others, there are some practices in which millers indulge to their own injury that should receive early and earnest consideration, and chief among these is the practice of consigning all surplus products of the mill.

The disposition to do away with the middleman is of course the cause, but if you will stop to reflect that all such consigned goods of whatever name or nature

when so consigned are at the mercy of the consignee and made the vehicle of all kinds of charges beside being slaughtered because they are in the hands of the purchaser anyway and cannot be withdrawn. This class of sales are not only not satisfactory in themselves, but they fix the price to a very great extent on all the other products of the mill.

The practice cannot be other than ruinous. If millers havn't found it to be so they may look with confidence for that result, and I venture the assertion that if it was entirely discontinued for three months they would get what they all so much desire, a healthy order business, whereas the general cry now is "market is dull, dead or lifeless" both foreign and domestic.

Prices of flour have not changed materially; choice patent can be got in car lots at from \$4.50 to \$4.75. Bakers, \$3.00 to \$3.25.

Bran and middlings move freely to Eastern and Southern markets at \$8.25 for sacked bran and \$9.50 to \$9.75 for sacked middlings.

Extensive contracts for carrying corn have been entered into by ocean lines which, with the great shipments of sack flour, keeps through freight at an exceedingly high figure and adds to the present dullness of the market. DON'T.

Wm. SANDERSON of the Phoenix Mills, will make a trip to Europe in February.

MILWAUKEE has "la grippe" in all styles, from the common plain everyday article to that with all the ornamentations that the most fastidious person could possibly desire—to see his wickedest enemy afflicted with. We take it as good-naturedly as possible. We are glad to say that in Milwaukee "la grippe" has proved more remunerative to the physicians than to the undertakers.

THE daily papers have been trying to make news by publishing stories of millers combines, syndicate deals concerning Milwaukee mills, elevators, breweries, cement mills, etc. Assertions are made one day and denied or not confirmed the next. We have had up to this date nothing of very great importance concerning our local milling interests to report except that our millers are well aware of the value of their property and have no occasion to sell for less than full value.

We regret to announce the death of O. L. Packard of this city. Mr. Packard succeeded in building up a great business in the machinery and supply line from a very small beginning. For the past few years his health has been poor and he spent a considerable time in the south endeavoring to recuperate, but his active mind drew him into business interests there also. Mr. Packard was an active, energetic business man, a good citizen, a kind husband and a loving father. What more can a man be?

THE city authorities are discussing the propriety of appointing an electrical expert to look after electric light, telephone, telegraph and street-car wires. There should be no hesitation in this matter. Milwaukee can better afford to pay for the best service obtainable in this line than to endanger the lives and property of its citizens. The utmost care however should be taken in securing a fully qualified man for the office. Such service comes high, but it is absolutely reckless to have any other. Get a good electrical expert, or tear down the light and car wires.

NEBRASKA MILLERS' STATE ASSOCIATION.

The Association met at the Capitol Hotel, Lincoln, Neb., Jan., 18, Pres. White of Crete delivered the annual address in which he congratulated the association on the result of the past year's work and made some suggestions for the future. Sec'y Harris read his report

showing the financial condition of the association and suggested the consideration of the subject of patent litigation and the liability of the millers to employees and others injured in the mills. This matter was discussed at some length and the secretary was instructed to get a legal opinion thereon. Sec'y Barry of the Millers' National Association was present for the purpose of inducing the organization to identify itself with that body. The association passed a resolution unanimously by which they affiliated with the National Association. The following officers were elected: President, O. A. Cooper, Humboldt; Secretary and Treasurer, D. H. Harris, Bennett; Assistant Secretaries, H. N. Wolfe of Culbertson and M. Viereg, Jr., of Central City, Executive Committee, F. S. Johnson of Milford, S. T. Leftwich of St. Paul, and A. Jaeggi of Columbus; Member of National Executive committee, C. C. White of Crete.

The association also passed a resolution requesting Nebraska members of congress to use their best efforts to secure the repeal of the duty in jute. The Nebraska Association now has a membership of about two hundred.

IOWA MILLERS' ASSOCIATION.

The Iowa Millers' Association met at Des Moines, Ia., Jan. 15, quite a number of millers from all parts of the State being in attendance. The officers elected for the ensuing year are: E. A. Consigny of Avoca, President; J. B. Jones, Algona, Vice President; J. T. Sharp, Des Moines, Secretary and Treasurer. The members had a general discussion in regard to raising wheat and milling the different varieties of wheat now raised in the State, and a committee consisting of E. A. Consigny of Avoca, J. B. Jones of Algona, and S. D. Nichols of Panora, was appointed to prepare an address to the farmers on the subject, and have the same published in the various papers of the State.

The members of the Mill Owners' Mutual Fire Insurance Company met in the Company's office in the afternoon to consider the business of the past year, and to elect officers and directors. The following were elected: Abner Groves, Dow City, President; H. C. Murphy, Des Moines, Vice President; J. G. Sharp, Des Moines, Secretary; C. B. Worthington, Des Moines, Treasurer. Reports were all received and accepted.

THE NATION'S WEALTH.

The evidences of national increase in wealth are constantly accumulating. One of the most interesting annual statements is that which shows the number and value of new buildings for which permits have been given in different cities. In this city and Brooklyn, with a population of about two millions and a half, the reported value of new buildings in 1889 was \$95,000,000, against only \$70,000,000 in the year 1888, so that the average was not far from \$38 for each inhabitant. It would be an error, of course, to infer that building elsewhere had been on the same scale, either as to the number of buildings or as to cost, but if the average for the whole country were but a quarter as large, the value of new buildings alone would be over \$600,000,000 for a single year. In 1880 there were 550,000 carpenters, masons, plasterers and plumbers, and with the increase of population the number should now be about 650,000. The wages of these skilled laborers averaged fully \$2 per day, and in a year of activity they are employed at least three-quarters of the time, which would make their wages alone nearly \$300,000,000. Adding the cost of brick, stone, mortar, lumber, iron and glass used in buildings, the value of new

structures must be every year several hundred millions, and in the main it is an addition to the wealth of the country.

Other evidence of the same sort may be found in the records of fire insurance companies. The amount of property at risk has increased from \$1,345,004,487 in 1860, to \$4,035,907,596 in 1870, and \$7,184,511,455 in 1880, and \$10,517,940,175 in 1885. It is supposed that the insurance represents about two-thirds of the value of the property that can be destroyed by fire, and if so the increase in five years was about \$5,000,000,000 in that kind of property only, indicating an increase of more than twice as much in the decade. Part of this increase is, of course, in goods which are annually consumed and replaced, but the value of new buildings must constitute a considerable share of the aggregate, and if it were but half, the buildings would average more than \$500,000,000 in value yearly.

Another evidence is found in the increase in assessed valuations in the States. Having collected these, a daily paper has estimated that the wealth of the country is not far from \$61,000,000,000, against \$43,000,000,000 in 1880. This estimate seems to err on the side of safety. The insurance record would indicate a much greater increase, and the addition of new buildings, with the new farms and improved lands, and the new railroads, new mines and manufacturing establishments, must have exceeded \$18,000,000,000, if the estimate of the Census Bureau for 1880 was correct. The railroad property alone has increased about \$5,000,000,000. The new farms, if the addition has been no greater than in the previous decade, must be reckoned at half as much more, and the increase in value of old farms, by the vast extension of railroad facilities, must have been far larger. The value of other real estate has also been affected greatly, particularly in Western and Southern towns and villages. When the increase in property covered by insurance is also considered, and the enormous expansion of mining and manufacturing interests, it can hardly be credited that the entire gain in wealth has been, as the estimate above given would imply, less than 50 per cent. in ten years.

Indeed, it is a notorious fact that the assessed valuations of property in very few States increase in proportion to the actual values. The enormous amount of personal property which escapes assessment entirely is all the time growing, and more rapidly than any other species of property. It would therefore be safe to say that, if assessed valuations have increased nearly 50 per cent., the actual values must have increased much more. It is hardly necessary to repeat that the census and all other estimates of the national wealth are open to serious distrust or criticism. But perhaps it may be practicable, after the more accurate information has been gathered which is promised by the coming census, to arrive at a reasonably close statement of the annual production, from which the estimates of wealth can be corrected.—*N. Y. Commercial Bulletin*.

CATARRH, CATARRHAL DEAFNESS—HAY FEVER.

A New Home Treatment.

Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result of this discovery is that a simple remedy has been formulated whereby catarrh, catarrhal deafness and hay fever are permanently cured in from one to three simple applications made at home by the patient once in two weeks.

N. B.—This treatment is not a snuff or an ointment; both have been discarded by reputable physicians as injurious. A pamphlet explaining this new treatment is sent free on receipt of stamp to pay postage, by A. H. Dixon & Son, 337 and 338 West King street, Toronto, Canada.—*Christian Advocate*.

Sufferers from Catarhal troubles should carefully read the above.

SITUATION WANTED—By a young man, 27 years of age, to take charge of a mill, ranging in capacity from 100 to 800 bbls. Am at present running a 100 bbl. mill for a good firm. Am a married man. For further information address *Experience, care of UNITED STATES MILLER AND MILLING ENGINEER*, Milwaukee, Wis.

[From our own Correspondent.]
OUR BALTIMORE LETTER.

"Orioles" Indulges in some Reflections.—The Baltimore Market.—Better Prices Predicted.—Grain Freight Rates.—Great Elevator Burned. Local Notes.

WE have no reference this month to the skunks, toads and vipers that foul, belittle and drag their slimy trails over trade, and then seek to hoodwink the public by whitewashing their rascality with home-made resolutions. No, no, for we are all on to them now; but it is to the decent element of the country that we wish to direct our remarks.

Millers, dealers and agents everywhere should have a better understanding with each other than now seems apparent. A mutual feeling of sympathy and confidence is very desirable and should really exist in a pronounced degree where interests are so closely allied as in this case.

Sacrifices are necessary to accomplish it, but we believe it will pay handsomely to make them. Let each show greater consideration for the other, and not harbor fears and suspicions continually that never materialize.

Never blame one man, or take your spite out on him, for the wrong-doings of another.

"Let every tub stand on its own bottom."

Believe every man honest until he proves himself a rogue. Learn to round off the edges, smooth the rough places and make the crooked straight, and then you will enjoy the bright side of life, but not until then.

In these days of sharp competition it is absolutely necessary to live up to agreements in every particular, if we hope ever to achieve permanent success.

It will not do at all, therefore, to take chances or experiment in the least, for in so doing we invariably come out losers in the end.

We must remember, too, that this is a big country, and that where one fails to do his duty hundreds are at hand willing to render better service upon the same terms. Neither are any so important that they cannot be dispensed with or replaced by others of equal worth. How essential is it, then, for us to "act well our part," and practise the "Golden Rule" alike to all? instead of resorting to those schemes which only bring discredit and temporary advantage at least.

Now that we have entered upon a new year it behoves us to ponder over the subject and decide wisely which shall be our policy for the future.

Millers as a rule are entirely too independent for their own good. They cannot afford to be so flippant dilatory and careless with their customers, while competitions are so numerous.

No dealer in the world is dependent upon any one mill for supplies, but you would imagine otherwise were you cognizant of facts which daily come under our observation. But probably the miller will retaliate and say that neither is he dependent upon any one buyer for the sale of his product, and neither is he in a literal sense, but to make such a declaration in this age of plenty, where supplies far exceed the demand, and to act accordingly, shows that he is not only not open to conviction, but already destined to dry rot.

To say that the consumption of flour is limited is but to state an incontrovertible fact, but to assert that its production is likewise restricted is something which the records fail to substantiate. While buyers are few and far between, sellers actually rival the sands upon the sea-shore in numbers. If millers then would only nurse, foster and encourage trade, rather than throw every obstacle and impediment in its way, their agents would soon reward them with a permanent and profitable custom.

As it is now we can never count on a patron from one week's end to the other—he is here today and gone tomorrow, simply because of the vacillating behavior of the manufacturer who wants this, that and the other thing so often that the customer is driven in desperation to seek supplies elsewhere. And thus from mill to mill he wanders, when in reality he could be secured permanently by any concern disposed to treat him fairly.

We know that dealers as a rule are very exacting and generally want the earth, but there is a way of humoring them and bringing them to terms without the harsh treatment usually practised. Relax the rigid arm of independence and show a more conciliatory spirit, and rapid and complete will be your success.

Concessions are in order on both sides, but experience teaches us that the mill should be the first to respond.

The flour business is not what it is cracked up to be any-how. In other commodities you can largely increase traffic by reducing values, but not so in flour simply because its consumption is limited.

Did it ever occur to you to compare the cost of the flour consumed by you yearly with that of other articles and luxuries of life? If not,

do so now, and see how picayunish it seems. The average quantity annually required for an individual is about one barrel, which costs at this time not exceeding \$5.50. What else in life costs us so lightly?

If you are a drinker, smoker or theatre-goer, then your cock-tails, cigars and amusements in either instance, cost you more in a single week than you pay for a whole year's supply of bread. Why we spend far more for our clothes, hats, shoes, shirts, cravats, underwear, and we were going to add, shoe-strings even, than we do for the staff of life.

And when it comes to the ladies—well, we will have to draw the line at them, for the price of a single bonnet would provide flour sufficient for an ordinary life-time, to say nothing of their silks, satins, laces and trimmings. It really does seem hard then, that such a staple should be used so sparingly.

Just to think that the Goulds, Vanderbilts and Astors, with all their millions of money, can consume no more flour individually than the poorest tramp on our streets. But a stomach is a stomach the world over, and no matter how hard you try you cannot cram any more of the article into one than 196 pounds annually.

While we may not be able then to increase the consumption of flour, we can by a closer union and fellowship with the trade, secure a larger percentage of its patronage.

The Baltimore flour market on the whole has been any thing but satisfactory the past month. The holiday season is generally dull, but this has been an exceptional one in that respect. While values are nominally the same as those quoted a month ago, a disposition is prevalent to meet buyers whenever they appear willing to trade.

The stock of flour here, Jan. 1st, exclusive of that held by city mills, was 78,000 barrels—a slight decrease only from that of Dec. 1st. Commission merchants are carrying the bulk of holdings and offering the same at figures fully 25 cts. below those current for lots to arrive.

We cannot understand how it is that one set of mills can consign so freely and accept prices which their next-door neighbors spurn to consider even at the mill. But that it is done is an every day occurrence, but how it is done is a mystery as yet unsolved. Such a proceeding works against the agent who sells to arrive at presumably bottom figures. Formerly spot offerings brought a premium over those to arrive, and justly so, for an additional expense was always incurred, but now the conditions are reversed and they are sold at a discount. Minneapolis patents have fluctuated during the month from \$4.90 to \$5.15, but are back again at this waiting to \$5.00.

Other standard makers of springs range from \$4.85 to \$5.00 according to quality.

Considerable was done in them when the price ruled at \$4.90 for the best, but since the improvement they have been entirely neglected.

Spring baker's have been in active request at figures ranging from \$3.40 to \$3.65. One agent alone has sold sufficient here to stock dealers for sometime to come.

Winter wheats are the sickest thing on the list.

Qualities below \$3.50 are not only particularly abundant, but thoroughly demoralized as well. Jobbers curtailing disbursement in the south has brought about the condition.

When the Baltimore sugar refinery is completed, however, which is now under construction, we will then have an outlet for all such grades.

Patents, straight, and clears though ranging from \$4.50 to \$4.75; \$4.00 to \$4.25, and \$3.75 to \$3.00, respectively, come in for a fair share of attention owing to dealers having an abiding confidence in their ultimate improvement.

Business though in winters of every description is very limited, and does not compare by long odds to that in springs.

We believe by the way that the public taste is changing in this direction and that after awhile we will see springs used almost exclusively.

City mills have had good trade in Rio brands of extra during the month at prices ranging from \$4.25 to \$4.50—a shade under those last quoted—and are consequently sold ahead at present.

They also report a satisfactory demand from Europe and New England for the better qualities, but a dearth of orders from the West Indies and home trade.

Local jobbers recently reduced prices 15 cts. on private brands of spring patents, but leading city mills, contrary to custom, failed to follow suit.

We quote the range of the flour market as follows:

Western Winter Wheat Super...	\$2.25	62.75
" Extra	2.75	3.50
" Family	2.75	4.75
Winter Wheat Patent	2.75	4.75
Spring " Straight	4.10	4.80
" Bakers	3.40	3.65

Baltimore Best Patent	\$5.80	62.50
" Choice	5.45	62.50
" High Grade Family	5.25	62.50
" Choco " Extra	5.10	62.50
Maryland, Virginia and Penna. Super.	2.25	62.75
" " " Extra	2.75	3.50
" " " Family	2.75	4.75
City Mills Super	2.00	62.10
" Rio Brands Extra	4.25	4.50

on January 1st. Mr. Lederer is well and favorably known in the West where he has travelled extensively in the interest of his firm.

Corn is grading nicely in Baltimore, but that which fails to grade brings very poor prices.

Clement B. Sern, of the Bernhard Sern Milling Co., of Milwaukee, was east recently on a business trip.

Peter New of Peter New & Sons wholesale flour and grocery dealers of Baltimore, seems to be as happy as a big sun flower all the time.

Louis Sinsheimer, the bonanza flour dealer of this city strolled on Change the other day and was the center of attraction. Mr. Sinsheimer rarely visits the floor, preferring to do his buying at his place of business.

The C. A. Gambril Mfg. Co. is getting big orders from Europe for its celebrated "Patapsco Superlative Patent." This is a blend flour of the highest quality. ORIOLE.

Baltimore, Jan. 18, 1890.

NEWS.—The Furness line of steamers has served notice that it will withdraw from Baltimore after January 1, the company having been denied certain necessary accommodation by the B. & O. railroad. The steamship line will have its headquarters at Newport News. The Furness line is the most important line of boats in Baltimore, and its withdrawal will be a serious blow to the commerce of that city. The B. & O. railroad has practically ceased to be a Baltimore road in the sense it was for a long period regarded.

MESSRS. KROEGER & LACHMANN, Neenah, Wis., now use steam as well as water-power.

THE McIntosh Roller Mill, McIntosh, was started up Christmas. Capacity 75 bbls. daily.

AT Waterford, Pa., Dec. 21, the saw, grist and cider mills of William Kibber were burned. Loss, \$15,000; insurance, \$4,000.

BREADSTUFFS export from San Francisco from July 1 to December 18, were of wheat, 6,013,200 centals; flour, 549,119 barrels, against 7,415,346 centals, wheat, and 345,396 barrels flour. These figures show a handsome increase over former years.

THE Chicago Graineries Co. Lt., (Munger & Wheeler Elevators bought by the English syndicate) raised the price of storage to over 10 cents per bushel per year. The Chicago board of trade protested against the advance and their protest was heeded.

THE Standard Oil Company has made arrangements for establishing the largest linseed oil mill in the world at Sioux Falls, South Dakota. It will have a capacity of between 300 and 500 barrels of oil per day, and will require a capital of \$1,000,000. The plant alone will cost 200,000.

AT Romeo, Mich., Dec. 20, fire destroyed the Romeo Flour Mills, located near the depot. The building was owned by J. W. Smith, and was operated by George E. Allen. The fire originated in the rear of the building, in a shed, presumably from a tramp. Loss to building and contents about \$3,000; no insurance.

THE Menasha, Wis., Wood Split Pulley Co. have orders from the new Sugar Loaf Roller Mill, Winona, Minn., for a full line of pulleys, including boot and head of elevators. The gentleman ordering says: "I am in a position to give my unbiased endorsement of your pulleys. They suit me." Russell Bros., of Appleton, Wis., have also just ordered a large number of pulleys for their extensive repairs, including 20 pulleys for boot and elevator heads.

A FIRE was discovered in the West Indianapolis Hominy Mills, Indianapolis, Ind., and in an hour the immense building, which covers a quarter of an acre, was in ruins. The loss is \$75,000, insurance \$40,000. The mill was one of the finest and largest in the country. It was built by Hall & Lilly, but Mr. C. E. Hall was the sole owner of the plant at the time of its destruction. The loss to him is particularly severe at this time, as the mill was running on full time to catch up with orders, which have been unusually heavy.

THE Minnesota State Grain Inspector, A. C. Clausen, has answered the inquiries of farmers and grain men throughout Minnesota with an explanatory circular. After describing the manner in which grain is inspected and charges for inspection, the circular says:

"In applying the established rules to the work of inspection, it is our policy to place as liberal an interpretation upon them as their language is susceptible of, and it is a universal rule with the department to give the benefit of the doubt in the matter to the shipper. We are constantly pressed on one side to raise the standard of grace and on the other side to lower it. We can do neither. We are glad, in fact anxious, to correct errors, but cannot change the standards."

Chas. E. Elsner, of Minneapolis, has been spending the holiday season Baltimore, where he is well and favorably known.

Henry A. Lederer was admitted into the flour and grain firm of S. P. Thompson & Co.



THE MILLER WRITES A LETTER TO HIS FAVORITE MILLING PAPER.

Deer editur—i dont kare of tha du call yew Old LaDy. I never kood hav run my mill succsessfully if i Hadnt red yure volubul paper
an tride to foller its Advice. I hav borreered a \$1 from a nukummer and send it to ye fur nother years subskription. Dont git Diskirijd
but go fer them fellers agin.

SKINNERS X RODE'S P. O. INDIAN. YURES TRULY
SILAS SKINNER.

THE CHICAGO AND NORTH- WESTERN RAILWAY. OVER 7,000 MILES

Of steel track in Illinois, Iowa, Wisconsin, Michigan, Minnesota, Nebraska, Dakota and Wyoming, penetrates the Agricultural, Mining and Commercial Centres of the

WEST AND NORTHWEST.

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J. W. WHITMAN, H. C. WICKER, E. P. WILSON,
General Manager, Trade Manager, Gen'l Pass. Agt.

NOTES

from the diary of tourists, commercial travelers, business men and others has re-

vealed: That the Wisconsin Central has the unqualified endorsement of all:

That the Wisconsin Central has to-day the most popular line between Chicago and Milwaukee, and St. Paul, Minneapolis and the Northwest;

That the Wisconsin Central is daily adding to its admirers as the recognized Pullman line between Chicago and Milwaukee and Ashland, Duluth and Lake Superior;

That the Wisconsin Central touches the most prominent points in Wisconsin, and that it has more important business centers on its through line than any other railway to and from the Northwest;

That the Wisconsin Central has made an enviable reputation with its peerless Dining Car Service;

That the Wisconsin Central runs fast trains on which all classes of passengers are carried with commodious and distinct accomodation for all:

That the Wisconsin Central has representatives distributed throughout the country, who will cheerfully give any information that may be desired and that its terminal Agents are specially instructed to look after the comfort of passengers who may be routed via its line.

For detailed information, apply to your nearest Ticket Agent; or to representatives of the Wisconsin Central Company.

S. R. AINSLIE, H. C. BARLOW,
General Manager. Gen'l Traffic Manager.

LOUIS ECKSTEIN,
Ass. Gen'l Pass. & Tkt. Agt.

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Fast Mail Line with Electric Lighted and Steam Heated, Vestibuled Trains between Chicago, Milwaukee, St. Paul and Minneapolis.

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STATIONS.	DEPART.	ARRIVE.
Champion, Republic,	2:00 A. M.	3:25 A. M.
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Marinette, Green Bay,	3:10 P. M.	3:55 P. M.
Depere,		
Green Bay, Depere, Appleton, Menasha, Neenah,	2:00 A. M. 7:55 A. M. 3:10 P. M.	3:55 P. M. 10:10 A. M.
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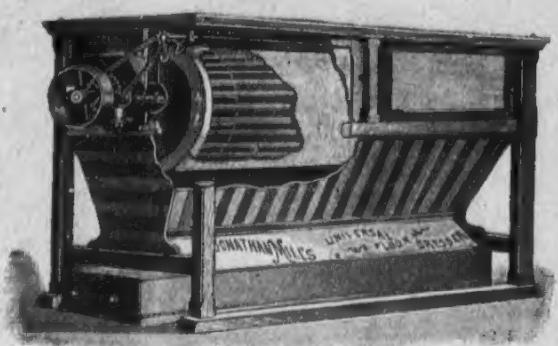
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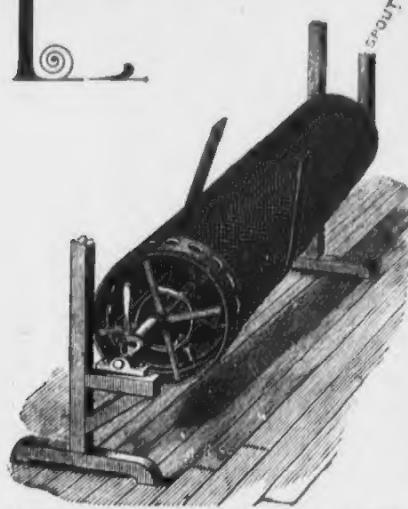


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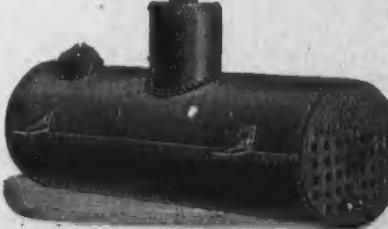
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